

5487
ASIATIC RESEARCHES;

OR,

TRANSACTIONS

OF THE

SOCIETY INSTITUTED IN BENGAL,

For inquiring into the

History and Antiquities,

THE

ARTS, SCIENCES, AND LITERATURE,

OF

ASIA.

VOLUME THE ELEVENTH.

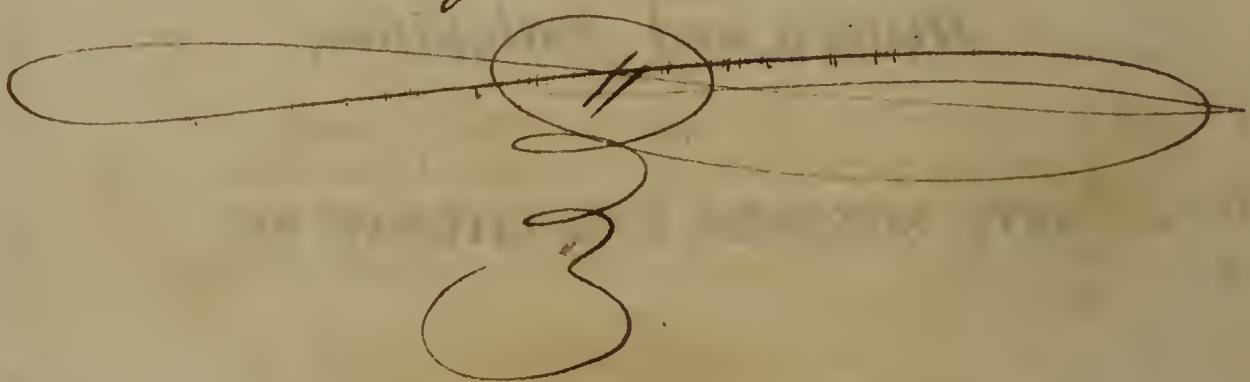
PRINTED VERBATIM FROM THE CALCUTTA EDITION.

LONDON:

PRINTED FOR J. CUTHELL; J. WALKER; R. LEA; LACKINGTON, ALLEN,
AND CO.; OTRIDGE AND SON; LONGMAN, HURST, REES, ORME,
AND BROWN; J. FAULDER; SCATCHARD AND LETTERMAN; E. COX;
J. ASPERNE; J. MAWMAN; J. MURRAY; BLACK, PARRY, AND CO.;
E. LLOYD; AND J. EBERS.

1812.

These Volumes are presented
by Mrs Eccles to her god Son
Richard Benson Stewart, as
a mark of her esteem 1828.



Printed by { T. Maiden, Sherbourne-Lane, Lombard-Street,
and
W. Wilson, 4, Greville-Street, Hatton-Garden, } London.



FRAGMENTS OF A PETRIFIED TREE NEAR TREEVILKERA
IN THE CARNATAC.

Top inserted in the Hill.

IN THE CARNATAC.

Root of a Petrified Tree.

III.

A CATALOGUE
OF
Indian Medicinal Plants and Drugs,
WITH
*Their Names in the Hindusta'ni and Sanscrit
Languages.*

BY JOHN FLEMING, ESQ M. D.

ADVERTISEMENT.

THE following catalogue is intended chiefly for the use of gentlemen of the medical profession on their first arrival in India, to whom it must be desirable to know what articles of the *Materia Medica* this country affords, and by what names they may find them.

The systematic names of the plants are taken from *Willdenow's* edition of the *Species Plantarum L.* with the exception of some new species not included in that work, which have been arranged in the system, and described by Dr. *Roxburgh*; who, with his usual liberality, permitted me to transcribe their specific characters and trivial names from his manuscript.

In ascertaining and fixing the Hindustáni and Sanscrit names which correspond to the systematic, a point of

considerable difficulty, but essential for the purpose of this catalogue, I have been greatly assisted by *Mr. Colebrooke*, on whose thorough acquaintance with oriental literature as well as his knowledge in botany, I knew that I could confidently rely.

The Hindustáni and Sanscrit words are expressed in Roman characters, conformably to the system of notation recommended by *Sir William Jones*; but as many prefer, for the Hindustáni, the system of *Mr. Gilchrist*, the names in that language are printed according to his orthography at the bottom of the page.

For the virtues and uses of such medicinal plants and drugs as are already well known in Europe, I have judged it sufficient to refer to the two latest and best works on the *Materia Medica*, *Murray's "Apparatus Medicaminum,"** and *Woodville's "Medical Botany."*† Of the qualities of those articles which are known only in this country, some account is now offered; which, however brief and imperfect, will, it is hoped, have at least the effect of promoting further inquiry.

I. Medicinal Plants.

ABRUS PRECATORIUS. (W.) *Gunchá*⁽¹⁾ H. *Gunjá* S.
The Seed. *Retti*⁽²⁾ H. *Racticá* S.

The root of this plant, when dried, coincides very exactly, in appearance and medicinal qualities, with the liquorice root, and is often sold for it in the bazars.

* *Apparatus Medicaminum, &c.* Auctore Jo. ANDREA MURRAY. Tom. VI. 8. *Gotting.* 1790.

† *Medical Botany, &c.* By WILLIAM WOODVILLE, M. D. 4 vols. 4to. *Lond.* 1794.

(1) *Gooncha.* (2) *Ruttee.*

The lowest weight in use among the Hindú druggists takes its denomination from the seed of the Gunjá, though the fictitious weight is nearly double that of the seed. Sir William Jones found, from the average of numerous trials, the weight of one Gunjá seed to be a grain and five sixteenths. The Retti weight, used by the jewellers and druggists, is equal to two grains three sixteenths nearly. See Asiatic Researches II. p. 154. and V. p. 92.

ACACIA ARABICA. (W.) *Babúl*,⁽¹⁾ H. *Barbúra* S.

The Gum. *Babúl-cá Gúnd*,⁽²⁾ H.

The Acacia Vera, (W.) *Mimosa Nilotica*, (L.) which yields the *Gummi Arabicum* of the European pharmacopœias, is not found among the numerous species of Acacias that are natives of Hindostan; but the gum of the *Babúl* is so perfectly similar to gum Arabic, that for every purpose, whether medicinal or economical, it may be substituted for it. The bark of the tree, like that of most of the Acacias, is a powerful astringent; and is used, instead of oak bark, for tanning, by the European manufacturers of leather in Bengal.

ACACIA CATECHU. (W.) *K'hayar*,⁽³⁾ H. *C'hadira* S.

Mimosa Cate, Murray II. 540.

Mimosa Catechu, Woodville II. 183.

ACORUS CALAMUS. (W.) *Bach*,⁽⁴⁾ H. *Vachá* S.

Murray, V. 39.

Woodville, III. 472.

ALLIUM SATIVUM. (W.) *Lehsen*,⁽⁵⁾ H. *Lasúna* S.

Murray, V. 122.

Woodville, III. 472.

(1) *Bubool*. (2) *Bubool-ka Goond*. (3) *Khuer*.

(4) *Buch*. (5) *Luhsun*.

ALOE PERFOLIATA. (W.) *Ghí-Cumár*⁽¹⁾ H. *Ghrita-Cumári* and *Taruni* S.
The Gum; *Elwa*⁽²⁾ H. *Mušepper*⁽³⁾ Arab.
Murray, V. 238.
Woodville, III. 556.

ALPINIA CARDAMOMUM. (Roxb.) *Iláchi*⁽⁴⁾ H. *E'lá* S.

Amomum Cardamomum. } Murray, V. 61.
} Woodville, II. 356.

AMOMUM ZINGIBER. (W.) *Adrac*⁽⁵⁾ H. *Ardraca* S.

The dried root, *Sont'h* H. *Sunt'hi* S.
Murray, V. 52.
Woodville, I. 31.

ANDROPOGON SCHÖENANTHUS. (W.) *Gendbél*⁽⁶⁾ H.
B'hústrína S.
Murray, V. 443.

This plant, under the name of *Juncus Odoratus*, had formerly a place in all the European pharmacopœias, but it is now rarely met with in the shops. It continues, however, to be a favorite herb with the Asiatics, both for medicinal and culinary purposes. The Hindu practitioners consider the infusion of the leaves as sudorific, diuretic, and emmenagogue. Whatever title it may have to these virtues, it is at least a very agreeable diluent; and, on account of its fragrant smell, aromatic flavour, and warm, bitterish but not unpleasant taste, is generally found to be a drink very grateful to the stomach in sickness. Many Europeans, with whom tea does not agree, use, instead of it, the infusion of this plant, to which they have given the name of lemon-grass.

ANETHUM SO'WA' (Roxb. MS.) *Sówá*⁽⁷⁾ H. *Misréyá* S.
Sp. Ch.—Annual. Leaves superdecompound. Umbel of 5—15 equally elevated radii. Fruit oblong, flat. Seeds without a membranaceous margin, and with three ribs on the base.

ANETHUM PANMORIUM (Roxb. MS.) *Mayuri*⁽⁸⁾ H.
Mad'hurica S.

Sp. Ch.—Annual. Erect. Ramous. Leaves superde-

(1) *Gheekoowar.* (2) *Elwa.* (3) *Moosubbur.* (4) *Ilachee*
(5) *Udruk.* (6) *Gund bel.* (7) *Soä.* (8) *Muyoorce.*

compound. Umbel of from 10 to 20 unequally elevated radii. Fruit oblong, deeply furrowed, but not winged.

The former of these umbelliferous plants resembles in appearance the *Anethum graveolens* (W.) and the other the *Anethum fæniculum* (W.). Both species are cultivated in Bengal, on account of their seeds, which are used in diet, as well as in medicine. They are warm aromatics, and may supply the places of dill and fennel-seed, as carminatives, in cases of flatulent colic or dyspepsia.

APIUM INVOLUCRATUM (Roxb. MS.) *Ajmud*⁽¹⁾ H.
Ajomóda S.

Sp. Ch.—Annual. Glaucous. Villous. Superior leaflets filiform. Both general and partial involucra about six-leaved.

This species of *Apium* is cultivated in Bengal for the seeds only, the natives never using the leaves. The seeds have a very agreeable aromatic flavor, and are therefore much employed in diet as a condiment. They are also used in medicine, in the same cases as the *Sowa* and *Mayuri* seeds above mentioned.

ARISTOLOCHIA INDICA. (W.) *Isármel*,⁽²⁾ H.

The root of this species of birth-wort is intensely bitter, and is supposed by the Hindus to possess the emmenagogue and antiarthritic virtues which were formerly ascribed in Europe to its congeners, the *Aristolochia longa* and *rotunda*. As its bitterness is accompanied with a considerable degree of aromatic warmth, it will probably be found a useful medicine in dyspepsia.

ARTEMISIA VULGARIS. (W.) *Nág-dóna* H. *Nágadamana* S.
Murray, I. 190.
Woodville, II. 331.

(1) *Ujmood.*

(2) *Isarmul.*

ASCLEPIAS ASTHMATICA. (W.) *Automel* H. (1)

Asclepias Vomitoria. Koenig's Ms.

I have inserted this plant on the authority of the following note, which was found among the late Dr. Koenig's papers, and communicated to me by Dr. Roxburgh. "Dr. Patrick Russell was informed by the Physician-General at Madras, that he had, many years before, known it (the root of the Asclepias Vomitoria) used, both by the European and native troops, with great success, in the dysentery, which happened at that time to be epidemic in camp. The store of Ipecacuanha had, it seems, been wholly expended; and Dr. Anderson, finding the practice of the black doctors much more successful than his own, was not ashamed to take instruction from them, which he pursued with good success; and collecting a quantity of the plant which they pointed out to him, he sent a large package of the roots to Madras. It is certainly an article of the Materia Medica highly deserving attention."

I have not obtained any further account of the medicinal virtues of this species of Asclepias, which grows in the Northern Circars, but is not met with in Bengal. It is, however, as Dr. Koenig observes, an article highly deserving attention. The Ipecacuanha root is one of the few medicines for which we have not as yet found any adequate substitute in India; and if such a substitute should be found in the root of the Asclepias Asthmatica, it would prove a most valuable acquisition to our Materia Medica.

BOSWELLIA THURIFERA. (Roxb.) *Salai* H. *Sallaci* S.

Olibanum (The Gum-resin.)

<i>Cundur</i> ⁽²⁾	<i>and Gen-</i>
<i>deh firozeh</i> ⁽³⁾	<i>H.</i>
<i>Cundura</i> S.	

The grateful odour diffused by Olibanum, when

(1) *Uctomul.* (2) *Coondoor.* (3) *Gundu-feerozu*, or *Gundu-birozu*.

thrown on the fire, must have early attracted the notice of mankind; as it appears that this fragrant gum-resin was used as incense, in the religious ceremonies of almost all the ancient nations. Of this honour it has kept possession, from the most remote antiquity, until the present time, when it still continues, unless when its place is supplied by Benzoin, to perfume the churches, mosques, and temples, both in Europe and Asia.

That naturalists should have remained in ignorance, or in error, until almost the present day, respecting the tree which yields a substance so long known, and so universally used, must appear not a little surprising. Such, however, is the fact; and the merit of having discovered the true origin of this celebrated incense, is due to Mr. Colebrooke, who has ascertained and proved, most satisfactorily, that the olibanum, or frankincense of the ancients, is not the gum-resin of the *Juniperus Lycia*, as was generally supposed, but the produce of our *Boswellia Thurifera*. See his paper on this subject in the Asiatic Researches, Vol. IX, p. 377, to which is subjoined a botanical description of the tree by Dr. Roxburgh.

Although the Olibanum is still retained in the pharmacopœias of the three British Colleges, it is seldom used as a medicine in modern practice. Formerly, however, it was held in considerable estimation, as a remedy in catarrh and hæmoptysis; and as it is less heating than myrrh, by which it has been superseded in these diseases, it might still, perhaps, be used with advantage, in some cases, in which the myrrh might prove too stimulant.

CAESALPINIA BONDUCELLA. (W.) *Catcaranja*⁽¹⁾ *Cat-calé-já*⁽²⁾ H. *Puti-Curanya*. S.

This shrub is a native of both the Indies; but its

(1) *Kut-kurunja.*

(2) *Kat-kulejec.*

use in medicine is, I believe, known only in the East. The kernels of the seeds are intensely bitter, and possess the tonic power in a very high degree. They are accordingly employed by the Hindu physicians, in all cases in which that power is more especially required; and particularly in intermittent fevers, for which they are considered as an almost infallible remedy. The mode of using them is as follows. One of the seeds, freed from its hard shell, is beat into a paste, with a few drops of water, and three corns of black pepper. This is formed into three pills, which are taken for a dose, and this dose is repeated three or four times a day, or oftener, if necessary. The decoction of the *Gentiana Cherayita* (*Roxb.*) is generally prescribed to be taken at the same time with the pills. See *Gentiana Cherayita*.

This method of curing intermittents is so generally successful, that it has been adopted by many European practitioners, particularly in those cases which so frequently occur, in which the patients have an aversion to the Peruvian bark, or cannot retain it on the stomach. In all such cases, and also on occasions where the Peruvian bark cannot be procured, I believe that the *Catcaranja* will be found one of the best substitutes to which we can have recourse; particularly if assisted by the decoction of the *Cherayita*, which indeed is so powerful an auxiliary, that it may be doubtful, in the case of success, to which of the two remedies the cure should be chiefly ascribed.

CANNABIS SATIVA. (W.) *B'hang* and *Gánja* H. *Ganjicá* S. Murray, IV. 608.

Dela Marck is of opinion, that the Indian *Gánja* is a different species of *Cannabis* from the *Cannabis Sativa*, and names it “*Cannabis Indica foliis alternis.*” (Encyc. Bot. I. 695.) But *Willdenow*, after remarking that the European species has also alternate leaves, assures us

that, on comparing it with many specimens of the Indian plant, he could not perceive any difference between them; See Sp. Pl. IV. 763. and *Dr. Roxburgh*, on comparing plants raised from Europe hemp-seed with the Gánja plant, could not discover the slightest difference between them; not even enough on which to found a variety.

CAPSICUM FRUTESCENS. (W.) *Lál Mirch* H.

CAPSICUM ANNUUM. { Murray, I. 732.
Woodville, III. 391.

The annual species of Capsicum is not a native of this country, and but rarely found in the gardens. The Capsicum Frutescens, of which there are several varieties, is cultivated in every part of India, on account of its pods; which afford to the inhabitants a condiment, as necessary for their rice and pulse diet as salt itself. In respect to the medical uses of this species, they perfectly correspond with those of the Capsicum Annum, for which see the authors above referred to.

CARICA PAPAYA. (W.) *Papaiya* H.⁽¹⁾ Rumph. *Amb.* I.
Tab. 50, 51.

This is not an indigenous tree of India, and consequently has no name in the Sanscrit language. It is a native of South America and the West Indies; whence it was brought, by the Spaniards and Portuguese, to the Philippines and Moluccas; and from these islands, being of very quick growth, it spread rapidly to all the other countries of India. It has long been cultivated in every quarter of Hindustàn, and is in flower and fruit during the greatest part of the year. The milky juice that flows from the fruit when an incision is made into it before it is quite ripe, is esteemed, by the inhabitants of the Isle of France and Bourbon, as

1) *Pupueya*.

the most powerful vermisuge that has yet been discovered. An account of this remedy was transmitted to the President of the Asiatic Society, by *Mr. Charpentier Cossigni*, in a letter, dated the 3d of November, 1800, of which the following is an extract.

“ Un hazard heureux a fait decouvrir a L’Isle de la
“ Reunion un remede le plus efficace de tous ceux
“ connus contre les vers. Il y a plusieurs années qu’on
“ en fait usage avec le plus grand succès, a L’Isle de
“ France, ou les maladies vermineuses sont tres com-
“ munes. C’est du lait de papayes. On incise ce
“ fruit quand il est verd. Il rend un lait, qu’on re-
“ cueille, et qu’on fait prendre à jeun au malade.
“ C’est le plus puissant de tous le vermifuges. On
“ pretend qu’il tue même le *Tænia cucurbiteux*, qui
“ est assez commun dans L’Isle. En reste, les preuves
“ de la vertu puissante de ce remede sont déjà tres
“ rombreuses, sans qu’il soit résulté d’accidens, quo-
“ qu’ on ait essayé de l’administrer en grande dose.
“ Ce qui rend ce remede precieux, c’est qu’une seule
“ dose suffit pour tuer tous les vers, quelle grande
“ qu’en soit la quantité.”

The vermisuge, thus strongly recommended, and on such respectable authority, has not yet come into use here, either among the native or European practitioners; although an account of it was published at the time in the Calcutta newspapers. A remedy, however, so simple, and so easy at all times to be procured, certainly deserves to have a fair trial. The dose for an infant is one tea-spoonful of the juice, mixed with thrice that quantity of warm water, or cow’s milk; for a child of six or seven years of age, one table spoonful; and for an adult, two table spoonfuls. A few hours after the patient has taken the dose of Papaya milk, a dose of *Oleum Ricini* is given to him, to promote the expulsion of the dead worms.

CASSIA FISTULA. (W.) *Ameltás*⁽¹⁾ H. *Suvernaca* S.
Murray, II. 510.
Woodville, III. 449.

CASSIA ALATA. (W.) *Dád-merden*⁽²⁾ H. *Dádrughna* S.

This shrub is cultivated in Bengal as an ornament to the flower garden. The expressed juice of the leaves, mixed with common salt, is used externally for curing the ring-worms. From this quality, it has obtained its Hindustáni and Sanscrit names; and for the same reason, it is called by *Rumphius*, *Herpetica*; and by French authors, *Herbe á Dartres*. Notwithstanding this general prepossession in its favour, in the many trials which I have made of it, for curing herpetic eruptions, I have oftener failed than succeeded.

CEDRELA TUNA. (W.) *Tún*⁽³⁾ H. *Tunna* and *Cuvéraca* S.

The first botanical description of this tree was given by *Sir William Jones*, in the 4th Vol. of the *As. Res.* p. 273. The wood is esteemed on account of its close grain and beautiful colour, resembling that of mahogany, and is much employed by the cabinet-makers in Calcutta, for the purpose of being made into furniture. No part of the tree is used in medicine by the Hindus; but a very intelligent English surgeon, now deceased, found the powder of the bark, and the extract made from it, very efficacious in the cure of fevers. He also experienced great advantage from the powder, applied externally, in the treatment of different kinds of ulcers. See a letter to *Dr. Duncan*, from *Mr. J. Kennedy*, surgeon at Chunar. (Annals of Medicine, I, 387.)

I have not met with any other account of the medicinal qualities of the Tún bark; but, on so respectable

(1) *Unultas.*

(2) *Dad murdum.*

(3) *Toon.*

authority, I judged it a proper object of further inquiry, and have therefore given the tree a place in the catalogue.

CITRUS AURANTIUM. (W.) *Narenj*⁽¹⁾ and *Narengi*⁽²⁾ H.
Nágaranga, S.

CITRUS MEDICA. (W.) *Lému*⁽³⁾ H., *Jambira* S.
Murray, III. 265. 284.
Woodville, III. 496. 500

CORDIA MYXA. (W.) Lehsóra⁽⁴⁾ H. Bahuváraca S.

Murray, II, 133.

Woodville, IV. 16.

CORIANDRUM SATIVUM. (W)*D'hanya*⁽⁵⁾ *H. D'amyáca S.*

Murray, I. 405.

Woodville, III. 492.

CROTON TIGLIUM. (W.) Jeypál and Jemálgóta⁽⁶⁾ H.
Lamálgóta S.

MUNIKAH IV 140

Murray, IV. 149.
Bennet, April 11. 149.

The seeds of this plant were formerly well in Europe, under the names of Grana Tiglia, and Grana Molucca. They were employed as hydragogue purgatives; but, on account of the violence of their operation, they have been long banished from modern practice. For the same reason, they are seldom used by the Hindu practitioners, though not unfrequently taken, as purgatives, by the poorer classes of the natives. One seed is sufficient for a dose. It is first carefully cleared from the membranaceous parts, the rudiments of the semi-nal leaves, that adhere to the centre of it; by which precaution, it is found to act less roughly; and then rubbed with a little rice gruel, or taken in a bit of the plantain fruit.

CUCUMIS COLOCYNTHIS (W.) *Indrāni*(?) H. *Indra*
váruni S.
Murray, I. 583.
Woodville, III. 476.

(1) *Narunj.* (2) *Narungee.* (3) *Lemoo.* (4) *Luhsora.*
(5) *D'hunya.* (6) *Jumalgota.* (7) *Indrayun.*

CUMINUM CYMINUM. (W.) *Jirá*.⁽¹⁾ H. *Jiraca* S.

Murray, I. 391.

Woodville, III. 521.

CURCUMA LONGA. (W.) *Haldi*.⁽²⁾ H. *Haridrá* S.

CURCUMA ZEDOARIA. (Roxb. MS.) *Nirbisi*.⁽³⁾ H.
Nirbisi S.

Kœmpferia Rotunda. { Murray, V. 82.
Woodville, II. 361.

Sp. Ch.—Spikes lateral. Bulbs, small, with long yellow palmated tubers. Leaves broad, lanceolar, subsessile on their sheath; sericeous underneath: colour, uniform green. (Roxb. MS.)

From the roots of several species of Curcuma, that are found in Bengal, the natives prepare a farinaceous powder, which they call Tikhur.⁽⁴⁾ It is in every respect similar to the powder prepared from the root of the Maranta Arundinacea, or arrow-root; and is often sold for it in the Calcutta shops.

DATURA METEL. (W.) *D'hatúra*.⁽⁵⁾ H. *D'hustúra* S.
{ Murray, I. 670.
Woodville, II. 338.

The D. Stramonium, which is the species used in medicine in Europe, is not found in Hindustan,* but the D. Metel grows wild in every part of the country. The soporiferous and intoxicating qualities of the seeds are well known to the inhabitants; and it appears, from the records of the native Courts of Justice, that these seeds are still employed, for the same licentious and wicked purposes, as they were formerly, in the

(1) *Jeera*. (2) *Huldee*. (3) *Nirbisse*. (4) *Teekhoor*. (5) *D'hutooru*.

* In the Asiatic Researches, VI. 351. Colonel HARDWICKE enumerates the *Datura Stramonium* among the plants which he found in the Sirinagur country; but he afterwards ascertained, that the plant which he met with was the *Datura Metel*; and has candidly authorized me to notice the mistake.

time of *Acosta* and *Rumphius*. See *Rumph.* Amb. V. 242. I do not know that either the seeds, or the extract prepared from the expressed juice of the plant, are used in medicine here; but those who place any faith in the accounts given by *Baron Stoerck*, and *Mr. Odhelius*,* of the efficacy of the extract of the *Stramonium*, in the cure of mania, epilepsy, and other convulsive disorders, may reasonably expect the same effects from the extract of the *Metel*; the narcotic power in the two species being perfectly alike. *Linnæus*, indeed, has given a place, in his *Materia Medica*, to the *Metel*, in preference to the *Stramonium*.

DAUCUS CAROTA. (W.) *Gajer*⁽¹⁾ H. *Garjara* S.

Murray, I. 316.

Woodville, III. 443.

DOLICHOS PRURIENS. (W.) *Kiwách* H. *Capicach'hu* S.

Murray, II. 438.

Woodville, III. 468.

ECHITES ANTEDYSENTERICA. (Roxb. MS.) *Curayia*⁽²⁾ H. *Cutaja* S.

The seed, *Inderjao* H. *Indrayava* S.

Murray, I. 828

Woodville, IV. 42.

EUPATORIUM AYAPANA. (W.)

This plant was brought, about ten years ago, from Brazil, of which country it is a native, to the Isle of France; and was, by the islanders, considered for a time, as almost a panacea. It appears, however, that it has entirely lost its credit with them, and that they do not now allow it to possess any medicinal virtue whatsoever. See *Bory de St. Vincent*, *Voyage aux principales Isles des Mers d'Afrique*. The instances are not unfrequent, of medicines which had been at first too highly extolled, hav-

* Vide MURRAY and WOODVILLE, loc. citat.

(1) *Gajur.*

(2) *Koorayu.*

ing afterwards met with unmerited neglect; and such may, perhaps, be the case in respect to the plant in question; which has been lately introduced into Bengal, and is now cultivated in the gardens about Calcutta. I have therefore inserted the Ayapana in the catalogue, as an object deserving further inquiry. Its congener, the *Eupatorium Cannabinum*, was strongly recommended by *Tournefort* and *Chomel*, as a deobstruent, in visceral obstructions consequent to intermittent fevers; and externally as a discutient, in hydroptic swellings of the legs and scrotum. See *Murray*, I. 202.

GENTIANA CHIRAYITA. (Roxb. Ms.) *Chirayita* H.
Cirataticta S.

Sp. Ch.—Herbaceous. Leaves, stem-clasping, lanceolate, 3—5 nerved. Corol rotate, four cleft, smooth. Stamens four. Capsule ovate, bifurcate, as long as the calyx. (Roxb. Ms.)

This species of Gentian is indigenous in the mountainous countries to the northward of the Ganges; but does not grow in the lower parts of Bengal. The dried herb, however, is to be met with in every bazar of Hindostan; being a medicine in the highest repute with both the Hindu and European practitioners. It possesses all the stomachic, tonic, febrifuge, and anti-arthritis virtues which are ascribed to the *Gentiana Lutea*, and in a greater degree than they are generally found in that root, in the state in which it comes to us from Europe. It may therefore, on every occasion, be advantageously substituted for it. The efficacy of the Chirayita, when combined with the Caranja nut, in curing intermittents, has been already mentioned. It is found equally powerful in exciting and strengthening the action of the stomach, and obviating flatulency, acidity and redundancy of phlegm, in dyspepsia and gout. For restoring the tone and activity of the moving fibre, in general debility, and in that kind of cachexy

which is liable to terminate in dropsy, the Chirayita will be found one of the most useful and effectual remedies which we can employ.

The parts of the plant that are used in medicine, are the dried stalks, with pieces of the root adhering to them. A decoction of these, or, which is better, an infusion of them in hot water, is the form usually administered. Spirituous tinctures are also prepared from the plant, with the addition of orange-peel and cardamom seeds; and those who consider such tinctures as of any avail, will find these very agreeable bitters. The most useful purpose, however, to which the tincture can be applied, is that of being added to the decoction, or infusion, with the view of rendering them more grateful to the stomach.

GLYCYRRHIZA GLABRA. (W.) *Jét'himad'h*⁽¹⁾ H. *Yasti-madhuca* S.

Murray, II. 457.

Woodville, III. 458.

HYPERANTHERA MORUNGO. (W.) *Saijana*⁽²⁾ H. *Só-bhanjana* S.

This tree, on account of its beauty, as well as its utility, is a favourite with the natives of Hindustan, who are fond of planting it near their houses, both in the towns and villages. The legumes, blossoms and leaves are all esculent, and are used both as pot-herbs and for pickles. The root of the young tree, when scraped, so exactly resembles horse-radish, as scarcely to be distinguished from it by the nicest palate; and is therefore used, by Europeans, instead of that root, as a condiment with animal food. In medicine, it completely supplies its place, whether employed externally, as a rubefacient, or used internally in cases of palsey, chronic rheumatism, and dropsy, as a stimulant.

(1) *Jet'heemud'h.*

(2) *Suhujna.*

The expressed oil of the seeds is used externally, for relieving the pain of the joints in gout and acute rheumatism. This oil is remarkable for resisting rancidity; and, on that account, has been selected by the perfumers, as the fittest for being impregnated with the odour of jessamines, violets, tuberoses, and other flowers; which yield little or no essential oil, but impart their fragrance to expressed oils.

The seeds of this tree are the Ben nuts of the old writers on pharmacy. Some of these writers supposed their *Lignum Nephriticum* to be the wood of the Morungo; but erroneously; the tree which affords that wood being a native of New Spain.

JATROPHA CURCAS. (W.) *Bágbarindá* H.

Murray, IV. 164.

The seeds of this plant are, like those of the Crotton Tiglum, (to which plant it is nearly allied,) frequently used as a purgative, by the more indigent natives. Their operation is milder than that of the Tiglum seeds, and two or three may be taken for a dose; but the same precaution must be used in freeing them from the membranaceous parts, that was formerly directed to be observed in respect to the Tiglum seeds.

JUSTICIA PANICULATA. (W.) *Calapnát'h*⁽¹⁾ and *Créat* H.
Cairáta S.

This species of *Justicia* is a native of Bengal, and of many other parts of Hindustan. The whole of the plant is intensely bitter; and it yields this quality equally to aqueous, vinous, and spirituous menstrua. It is much used, by the native practitioners, in fevers and dysenteries. The French and Portuguese inhabitants of India consider it as an excellent stomachic; and it forms the basis of their bitter tincture, so well known on the Malabar coast by the name of *Drogue Amere*.

(1) *Kulupnat'h.*

LAURUS CINNAMOMUM. (W.) *Dárchini*⁽¹⁾ H. *Dárasita* S.
Murray, IV. 417.
Woodville, I. 80.

LAURUS CASSIA. (W.) *Tejpát* H. *Tamála patra* S.
The Bark *Tej*⁽²⁾ H. *Twacha* S.
Murray, IV. 441.
Woodville, I. 82.

LIGUSTICUM AJAWAIN. (Roxb. Ms) *Ajawain*⁽³⁾ H.
Yavani S.

Sp. Ch.—Annual. Erect. Leaves superdecompound, with filiform leaflets. Ridges and furrows of the seeds distinct and scabrous.

The seed of this species of lovage is an excellent aromatic. It is much used by the natives as an agreeable condiment in their dishes, and for improving the flavour of the betel leaf and nut in their Páns. In medicine, it is esteemed a powerful remedy in the flatulent colic; and is employed by the veterinary practitioners in analgacus diseases of horses and cows.

This is the seed mentioned and recommended to notice by the late *Dr. Percival*, in his Essays, (I. 433.) under the name of Ajava seed.

LINUM USITATISSIMUM. (W.) *Tisi*⁽⁴⁾ H. *Atasi* S.
Murray, III. 474.
Woodville, II. 303.

MELIA AZEDARACHTA. (W.) *Nimb*⁽⁵⁾ H. *Nimba* S.

MELIA SEMPERVIRENS. (W.) *Bacäin*⁽⁶⁾ H. *Mahá-Nimba* S.

These two species of the bead-tree are small elegant trees, cultivated very generally in Hindostan on account of their beautiful blossoms, and the medicinal qualities of the leaves. The leaves have a nauseous, bitter taste, devoid of astringency, which they readily impart to water. The decoction of them is used internally, in cases in which the tonic and stomachic virtues of simple

(1) *Darcheenee*. (2) *Tuj*. (3) *Ujwayun*. (4) *Teesee*. (5) *Neemb*.
(6) *Bukayun*.

bitters are required. They are also employed, externally, as a discutient and emollient, either in fomentations, or in the form of cataplasm; for which last purpose they are simply heated in an earthen pot, and then bruised and applied to the part affected.

MENISPERMUM CORDIFOLIUM. (W.) *Gurcha*⁽¹⁾ H. *Guduchi* S.

Cit-amerdu. Van Rhede, H. M. VII. 39.

MENISPERMUM VERRUCOSUM. (Roxb. Ms.) *Putra Wali*,
Java.

Funis felleus. Rumph. *Amb.* V. 82.

Sp. Ch.—Perennial. Scandent. Verrucose. Leaves cordate, acuminate, entire, smooth. Male racemes from the naked branches, simple. Nectareal scales inserted in the filaments.

The Menispermum Cordifolium is indigenous in most parts of Hindostan. The decoction of the leaves is prescribed, by the Hindu physicians, as a febrifuge, and as a tonic in gout. It is also one of the many remedies which they give for the cure of the jaundice. The very young leaves are employed externally, as an emollient, made into the form of liniment, with milk.

The Menispermum Verrucosum was introduced into Bengal, from Malacca, by *Captain Wright*, about ten years ago; and is now cultivated in the gardens about Calcutta. It is readily propagated from cuttings, which are remarkable for the great length of time during which they preserve the power of vegetation. Every part of the plant is exceedingly bitter, particularly the stalk; which, from this quality, has obtained its Javanese name *Putra Wali*; literally translated by *Rumphius*, *funis felleus*. It is the remedy generally employed in the Malay countries, for the cure of intermittent fevers; and from *Captain Wright's* account, is as powerful a febri-

(1) *Goorcha.*

fuge as the Peruvian bark. It has not, however, come into use here; nor, while we have other approved remedies, is there any occasion for having recourse to it; but I have given it a place in the catalogue, for the sake of captains and surgeons of ships trading to the eastward, who, should their stock of bark at any time fail them, may in all the Malay islands find a valuable substitute for it in the Putra Wali.

MENTHA VIRIDIS. (W.) *Podina*⁽¹⁾ H.

Murray, II. 178.

Woodville, III. 463.

MIRABILIS JALAPPA. (W.) *Gul Abbas* H.

This is not an indigenous plant of Hindostan; but all the beautiful varieties of it are now cultivated as an ornament to the gardens in Bengal.

The officinal jalap was formerly supposed to be the root of this species of *Mirabilis*, and hence it obtained its trivial name; but that valuable drug is now ascertained to be the root of a species of *Convolvulus*. As the *Mirabilis*, however, had so long retained the credit of affording the jalap, and, with authors of the highest authority in botany, from *Plumier* to *Linnæus*, I was desirous of discovering what degree of purgative quality it really possessed. With that view, having carefully dried and powdered some of the root, I sent it for trial to the European and native hospitals. *Dr. Hunter's* report, from the former of these, is as follows: "We have tried the *Mirabilis* with thirteen patients. They do not complain of its being disagreeable to the taste, nor of its exciting nausea or griping; but its operation as a purge is uncertain, and two drams of it sometimes procure only a single stool. It seemed to answer best with those who had bowel complaints." *Dr. Shoolbred* found the

(1) *Poodeena*.

root equally weak and uncertain in its operation, in the trials which he made of it in the native hospital.

NICOTIANA TABACUM. (W.) *Tambácu*,⁽¹⁾ H. *Támracuta* S.
Murray, I. 670.
Woodville, II. 338.

NIGELLA INDICA. (Roxb. MS.) *Cálá Jíra*,⁽²⁾ H. *Musavi*, S.
Sp. Ch.—Annual. Petals entire. Pistils five: length of the stamens. Leaves decompound. Exterior lip of the nectary ovate, and deeply two cleft. Interior entire, and acute. (Roxb. MS.)

The seed of this plant is used by the natives more in diet than in medicine; and, on account of its agreeable flavour and taste, forms the principal condiment in the Curries. The seed of its congener, the *Nigella Sativa*, is, in like manner, the favourite spice of some nations on the continent of Europe, particularly the Hanoverians, who have given it the name of Tout Epice. See Murray, III. 34, and Plenck, Plant. Med. V. 49.

OCIMUM PILOSUM. (Roxb. MS.) *Rihán*, H.
The seed. *Tukhmi Rihán*,⁽³⁾ H.

Sp. Ch.—Shrubby. Hairy. Branches four sided. Leaves ovate, oblong, serrated, with margins and petioles hairy. Bracts petioled, ovate, cordate, ciliate. Upper lip of the calyx round, cordate and hairy, with corolla twice its length. (Roxb. MS.)

Many species of the *Ocimum* are common in Bengal, and comprehended under the generic name of *Tulasi*. One of them, the *Ocimum Sanctum*, (W.) *Parnasa*, in Sanscrit, is well known to be held in higher veneration by the Hindus, than any other plant. The leaves of most of the species have a slightly aromatic taste, and a strong but not disagreeable smell.

(1) *Tumbakoo*.

(2) *Kalajeera*.

(3) *Tookhmi rihan*.

I have given the Rihán a place in the catalogue on account of the peculiar quality of its seed, which, when infused in cold water, forms a mucilage much used by the natives as a demulcent in catarrhs. From the slight aroma which it possesses, it lies easier on the stomach than most other vegetable mucilages. It is a favourite medicine with the native women, who take it after parturition, and suppose that it relieves the after-pains.

PHYLLANTHUS EMBLICA. (W.) *Aonla*,⁽¹⁾ H. *Amalaci*, S. Murray, IV. 127.

This tree is found, both in a wild and cultivated state, in most parts of Hindostan. Its fruit is one of those which were formerly known in Europe under the name of Myrobalans, but which have been long discarded from the pharmacopœias. It is, however, in general use with the Hindu physicians, as an eccoprotic, and enters into many of their compositions. It is particularly an essential ingredient in the preparation of the Bitlaban, a medicinal salt, which will be afterwards noticed.

PAPAVER SOMNIFERUM. (W.) *Post*, H. *C'hasa*, S. Opium, *Afiün*, H. Murray, II. 254. Woodville, III. 503.

PIPER NIGRUM. (W.) *Mirch*, H. *Maricha*, S. Murray, V. 22. Woodville, III. 513.

PIPER LONGUM. (W.) *Pipel*,⁽²⁾ H. *Pippali*, S.

PLANTAGO ISPAGHUL. (Roxb. MS.) *Ispaghul*,⁽³⁾ H.

Sp. *Ch.*—Caulescent. Leaves linear, lanceolate, three nerved, slightly woolly. Peduncles axillary. Head cylindric. Capsule two-seeded. (Roxb. MS.)

(1) *Uonla* and *Awula*.

(2) *Peepul*.

(3) *Ispughoot*.

This plant was formerly supposed to be the *Plantago Psyllium* (L.) but is certainly a different species. It is cultivated in Bengal on account of the seeds, which, like those of the *P. Psyllium*, form a rich mucilage with boiling water. For this purpose, a pint of water is poured on about two drams of the seeds. This mucilage is very generally used, as a demulcent, in catarrhs, nephritic pains, heat of urine, and other diseases in which acrimony is to be obviated or palliated.

PLUMBAGO ZEYLANICA. (W.) *Chítá*,⁽¹⁾ H. *Chitraca*, S.

PLUMBAGO ROSEA. (W.) *Lál Chítá*, H. *Racta Chitraca*, S.

Both these shrubs are cultivated in Bengal as flower plants. Every part of them is extremely acrid, particularly the root; which, in its recent state, being bruised, is employed, by the Hindu practitioners, as a vesicatory.

The *Plumbago Europaea* is mentioned by *Murray*, (I. 772.) as having been found efficacious in the cure of cancer, for which purpose the ulcers are dressed, thrice a day, with olive oil, in which the leaves of the plant have been infused. The authorities which he quotes, for the cures effected by this application, are respectable; and, as our species coincide entirely in quality with the *Plumbago Europaea*, it may be worth while to make a trial of their power in a disease so deplorable, for which no adequate remedy has yet been discovered.

PTEROCARPUS SANTALINUS. (W.) *Ract Chandan*,⁽²⁾ H.
Racta Chandana, S.

Murray, VI. 59
Woodville, IV. 109.

PUNICA GRANATUM. (W.) *Anár*, H. *Dadima*, S.
Murray, III. 262.
Woodville, I. 158.

(1) *Cheetá*.

(2) *Rukut Chundan*.

The flowers of this beautiful shrub, which were formerly well known under the name of Balaustines, are now neglected; but the rind of the fruit is still considered as one of the most useful medicinal astringents, in cases wherein that quality simply is required. This shrub affords another valuable remedy, in the fresh bark of its root, for the knowledge of which we are indebted to the Hindu physicians. See "An Account of an Indian Remedy for the Tape-worm," by *Dr. Buchanan*, in the Edinburgh Medical and Chirurgical Journal, No. IX. p. 22,

The Tœnia is not a common disorder in Bengal; but since the date of *Dr. Buchanan's* communication, several cases of it have occurred here, to *Dr. Hunter*, and to *Dr. Shoolbred*, in which the bark of the pomegranate root was used with complete success, and without having failed in a single instance. The following is the method in which it is prepared and administered. Eight ounces of the fresh bark of the root are boiled in three pints of water to a quart. Of this decoction, the patient takes a wine-glass full; and repeats that quantity, at longer or shorter intervals, as the sickness and faintness which it generally occasions will allow, until he has taken the whole. The worm is commonly voided in a few hours after the patient has begun to take the medicine, and not unfrequently comes away alive.

RICINUS COMMUNIS. (W.) *Arend*,⁽¹⁾ *H. Eranda*, S.

This plant is cultivated, for both œconomical and medicinal purposes, over all Hindostan. The expressed oil of the seeds, so well known in Europe under the name of castor oil, is more generally used as a purgative than any other medicine; and perhaps there is no other on which we

(1) *Urand.*

may with so much confidence rely, as a safe and at the same time an active cathartic. It may be given with propriety, in every case in which that class of remedies is required, (unless when the most drastic are necessary,) and to patients of every age and constitution; for though it seldom fails to produce the effect intended, it operates without heat or irritation.

The oil should be expressed, in the manner directed by the London College, from the decorticated seeds, and without the assistance of heat. That which is obtained by boiling the seeds in water, is injured both in smell and taste, and becomes sooner rancid than the oil procured by expression.

RUBIA MANJIT'H. (Roxb. Ms.) *Manjīt'h*⁽¹⁾ H. *Manjīsh'tha* S.

Sp. Ch.—Pentandrous. Perennial. Scandent. Branches with four hispid angles. Leaves quatern, long-petioled, cordate, acuminate, 5—7 nerved; hispid. (Roxb. Ms.)

This species of Madder is indigenous in Nepal, and is used by the dyers and calico-printers, in the same manner as the *Rubia Tinctorum* is in Europe. Parcels of it have been frequently sent to England, where it was found equal in quality to the best Dutch madder. I know not that it has ever been tried here in medicine; but, from its sensible qualities being the same with those of the *Rubia Tinctorum*, there is reason to conclude, that it may be found equally efficacious with that drug, as a deobstruent and emmenagogue.

RUTA GRAVEOLENS. (W.) *Saturi* H.

Murray, III. 112.

Woodville, I. 108.

(1) *Munjeet'h.*

SIDA CORDIFOLIA. (W.) *Bariála*⁽¹⁾ H. *Bat'yálaca* S.
SIDA RHOMBIFOLIA. (W.) *Lál Bariála* H.
SIDA RHOMBOIDÆA. (Roxb. Ms.) *Saféd Bariála* H.

Sp. Ch.—Shrubby. Erect. Ramous. Leaves short-petioled, rhomboid, lanceolate, serrate, 3-nerved, villous. Stipules setaceous. Peduncles axillary, solitary, shorter than the leaves, one-flowered. Capsules 10, without beak. (Roxb. Ms.)

There are several other species of the *Sida* in Bengal; but I have selected these three, as being the kinds most generally used in medicine by the Hindus. Like the other columniferous plants, they all abound in mucilage, and are much employed by the natives as demulcents and emollients. They possess these virtues in at least an equal degree with our officinal *Althœa* and *Malva*; and may well supply their place, either for internal use, or, externally, for fomentation, catplasms, and enemata.

STRYCHNOS NUX VOMICA. (W.) *Cuchila*⁽²⁾ H. *Culaca* S.
Murray, I. 703.
Woodville, IV. 29.

STRYCHNOS POTATORUM. (W.) *Nir-malli*⁽³⁾ H. *Cataca* S.

The seeds of the *Strychnos Nux Vomiça* are reckoned amongst the most powerful of the narcotic poisons. In Germany, nevertheless, they are considered as medicinal, and have been recommended, by many authors of that nation, as efficacious antispasmodics and tonics; but the British physicians have prudently abstained from the use of so dangerous a remedy; and for the same reason, these seeds are seldom, if ever, employed in medicine by the Hindus. They are sometimes used, however, for a very pernicious purpose, by the distillers, who add a quantity of them in the process of distilling arrack, to render the spirit more intoxicating.

(1) *Buryala.*

(2) *Koochila.*

(3) *Nirmulce.*

The seeds of the *Strychnos Potatorum*, though never used in medicine, are highly valuable, and serviceable, to both Europeans and natives, from the quality which they possess, of clearing muddy water, and rendering it potable; to which the trivial name of the tree, first given to it by *Koenig*, alludes. One of the seeds is rubbed very hard, for a minute or two, round the inside of an earthen vessel, into which the water is poured, and left to settle. In a short time, the impurities subside, and leave the water perfectly limpid and tasteless.

SINAPIS DICHOTAMA: (Roxb. Ms.) *Serson*⁽¹⁾ H. *Sar-shapa* S.

Sp. Ch.—Dichotomous. Siliques cylindric, smooth, spreading. Beak straight and tapering. Leaves stem-clasping; the lower somewhat lyred; superior ovate, lanceolate, entire: All are smooth, as are also the stem and branches. (Roxb. MS.)

SINAPIS RAMOSA. (Roxb. Ms.) *Rai*⁽²⁾ H. *Rajicá* S.

Sp. Ch.—Annual. Erect. Ramous. Siliques expanding, linear, vertically compressed smooth. Leaves petioled; lower lyred: superior sublanceolate. (Roxb. Ms.)

Both these species of mustard are extensively cultivated in Bengal, on account of the oil procured from the seeds. In respect to medicinal qualities, these seeds correspond exactly with the seed of the *Sinapis Nigra*, (W.) and may be used, with equal advantage as the latter, either internally, as stimulants in rheumatic and paralytic affections, or externally for sinapisms. See Murray, II. 398. Woodville, III. 409.

SWIETENIA FEERIFUGA. (W.) *Rahuna* H. *Soymido*
Telinga.

All the four species of the noble genus *Swietenia* are lofty trees, remarkable for the excellent quality of

their wood. The three following are indigenous in Hindostan. 1. *S. Febrifuga*, which we have inserted in the catalogue on account of the medicinal qualities of its bark. 2. *S. Chickrassa*, (Roxb.) which affords the wood of that name, esteemed by the cabinet-makers in Calcutta as little inferior to mahogany. 3. *S. Chlo-roxylon*, (Roxb.) the wood of which, from the closeness of its grain, and its beautiful bright yellow colour, has obtained from the English in India the name of Satin-wood. The fourth is a native of Jamaica and Spanish America, *S. Mahogani*. (W.) The excellence of the wood of this tree, and its superiority to every other, for all domestic purposes, is universally allowed.

The *Swietenia Febrifuga* is indigenous in the mountainous parts of the Rajahmundry Circar. It is a large tree, rising with a straight stem to a great height. The wood is remarkably durable; and on that account is preferred by the Telengas to any other for the timber-work of their temples. The bark is covered with a rough grey cuticle, and internally is of a light red colour. It has a bitter united with an astringent taste; both in a strong degree, particularly the bitter. We are indebted to *Dr. Roxburgh* for the discovery of its medicinal virtues. Judging from its sensible qualities, that it might possess a considerable tonic power, and prove a useful remedy for the intermittent fever, he made trial of it in several cases of that disease, and found it fully answer his expectation. With the view of further investigation, he afterwards sent a quantity of the bark to England, where it was tried in the hospitals with equal success, and considered as a valuable substitute, in many cases, for the *Cinchona*. On that account it has been received by the Edinburgh College into their *pharmacopœia*, together with its congener, the *Swietenia Mahogani*, with which in its properties it nearly coincides. See *Dr. Duncan's*

Tentam: Inaug. de Soymida: Edinb. 1794; and the New Edinb. Disp. 1806.

The *Swietenia Febrifuga* is not a native of Bengal; and therefore is little known either to the Hindu or European practitioners here. I have been informed, however, that it was found, by the late *Dr. Kennedy*, on the hills to the southward of Chunar, where it was called, by the natives, Rohuna; and it is probable that this valuable tree may be discovered in the mountainous districts of some of the other upper provinces.

SYRIUM MYRTIFOLIUM. (Roxb. MS.) *Chandan*,⁽¹⁾ H.
Chandana, S.

SANTALUM ALBUM. { *Murray*, II. 14.
 { *Woodville*, IV. 136.

TAMARINDUS INDICA. (W.) *Amli*,⁽²⁾ H. *Amlica*, S.
 Murray, II. 552.
 Woodville, III. 544.

TERMINALIA BELERICA. (Roxb. MS.) *Bahira*,⁽³⁾ H.
 Vibhi-taca, S.

TERMINALIA CHEBULA. (W.) *Har*,⁽⁴⁾ and *Hara*,⁽⁵⁾ H.
 Haritaca, S.

The unripe fruit, *Zengi Har*,⁽⁶⁾ H.

The fruit of the *Phyllanthus Emblica* has been already noticed as one of the kinds of the Myrobalans of the writers on pharmacy. Another kind, the Beleric, is the dried ripe fruit of the first species of *Terminalia* here inserted. It is about the size of an olive, of a yellowish grey colour, obovate shape, and marked with five longitudinal furrows. In sensible and medicinal qualities, it coincides with the other kinds. The second species, the *Terminalia Chebula*, yields several different kinds of Myrobalans; different names having been given to the drupe, according to its degree of maturity when taken from the tree. Those chiefly used in medicine, are the *Har* and the *Zengi Har*. The *Har* is the dried ripe fruit.

(1) *Chundun*.

(2) *Imlee*.

(3) *Buhera*.

(4) *Har*.

(5) *Hara*.

(6) *Zungi Har*.

It is the largest of the Myrobalans, of an oblong ovate shape, marked with five furrows and five ridges alternately. It is sometimes used medicinally as a gentle purgative, but more frequently employed for domestic purposes, particularly by the dyers, who consume large quantities of it for preparing the cloth to receive the colours. See As. Res. IV. 41.

The Zengi Har is the Indian or Black Myrobalan of the pharmaceutical authors. It differs from the other kinds in having scarcely the rudiments of a nut, being the fruit dried in a half ripe state.* It is of an

* It was not until very lately that I could obtain any information respecting the tree which affords the *Zengi Har*; the *Hindu* druggists to whom I applied, not having been able to give me any account of it. Dr. ROXBURGH, to whom I mentioned this circumstance, on examining the drug, conjectured it to be the unripe fruit, or the diseased germ of some species of *Terminalia*, caused by some insect, like galls. The justness of his conjecture was soon afterwards confirmed, on inspecting the unripe drupes of a *Terminalia Chebula* in the Botanic Garden; the appearance of which corresponded exactly with that of the *Zengi Har*; and which, on being dried, proved to be that very fruit.

The uncertainty in which the writers on the *Materia Medica* still continue respecting the trees which yield the different kinds of *Myrobalans*, appears from the following remark of Professor MURRAY, (Ap. Med. VI. 235.) "De reliquarum (*Myrobalanorum*) specie Bo-
" tanicâ nihil certi pronuntiari potest, quin adhuc disputatur utrum ex
" diversis arboribus petitæ sint, an potius ex eâdem." A considerable degree of light will be thrown on the subject by the following extract from a *Persian* treatise on medicines, the *Mekhzen-ul-Adviyeh* of MUHAMMED HOSEN SHIRAZI, communicated to me by the kindness of MR. COLEBROOKE; and which, had I received it sooner, would have saved me the trouble of my inquiries respecting the *Zengi Har*.

Under the head *Ahilej*, (the *Arabic* name answering to the *Persian* *Halileh*,) the author distinguishes the following kinds, as the produce of the same tree (*Terminalia Chebula*) gathered at different degrees of maturity.

1. *Hatileh Zira*, gathered when the fruit is just set. Being dried, it is about the size of the *Zira*. (*Cumin seed*.)
2. *H. Jawi*, when more advanced. It is the size of a barley-corn. (*Jaw.*)
3. *H. Zengi, Hindi* or *Aswed*, when the young fruit is still fur-

oblong, pointed shape, about the size of a pistachio nut, of a deep black colour, and a firm, compact substance. Its taste is bitterish, and strongly astringent. The Zengi Har is, as far as I can learn, more frequently used in medicine, by the Hindus, than any of the other Myrobalans, being very generally employed by them as a purgative. It operates briskly, but without occasioning heat or irritation. Persons liable to redundancy of bile, habitual costiveness, or any other complaint which requires the frequent use of gentle laxatives, will find this one of the most convenient which they can use.

TERMINALIA CITRINA. Roxb. (MS.) *Caducay*, Telinga.

This tree is a native of the mountainous parts of the Northern Circars. The fruit is the Myrobalanus Citrina of the shops. It is used in medicine in the southern part of the Peninsula, but is not known to the Hindu practitioners in Bengal. The chief use of it, however, to the southward, is as a mordant for fixing the colours in printing their beautiful chintzes.

TRIGONELLA FÆNUM GRÆCUM. (W.) *Met'hi*,⁽¹⁾ H.

Met'hi, S.

Murray, II. 447.

Woodville, III. 487.

VALERIANA JATAMANSI. (Roxb.) *Jatamansi*, H. *Jatamansi*, S.

The vegetable which affords the Indian Nard, so celebrated by the ancients as a perfume, remained altogether unknown to naturalists, until it was

ther advanced. Being dried, it is of the size of a raisin, and is black; whence its name. (*Aswed* black, or *Zengi* negro.)

4. *H. Chini*, gathered when the nut has acquired some degree of hardness. The dried fruit is of a green colour, inclining to yellow.

5. *H. Asfer*, when approaching to maturity. The fruit, when dry, is of a reddish yellow; whence the name. (*Asfer*, yellow.)

6. *H. Cábuli*, when the fruit is come to full maturity.

(1) *Met'hee*.

discovered by the late *Sir William Jones*, who, valuable as his time was, considered the subject as not unworthy of his inquiry; and with his usual accuracy of research, proved beyond all question, that the spikenard of the ancients is the plant called, by the Arabians, *Sumbul-ul-Hind*; and by the Hindus, *Jatamansi*. See *As. Res.* II. 405, and III. 105, 433. It is a species of *Valerian*, and a native of *Nepal* and *Butan*. The perennial, hairy portion of the stem, immediately above the root, is the part which, when dried, is so highly esteemed as a perfume; and which is also used in medicine. The Hindu physicians prescribe it, chiefly, in diseases of the bowels; but, as it strongly resembles in taste, smell, and flavour, the officinal *valerian*, there is reason to expect that it will be found equally efficacious with that root, as an anti-spasmodic, in epilepsy, hysteria, and other convulsive disorders.

VITEX NEGUNDO. (W.) *Nisinda* and *Samb'halu*,⁽¹⁾ H.
Sind'huca and *Sind'havora*, S.

This elegant shrub is very generally cultivated in *Hindustan*, as well on account of its beauty, as its valuable medicinal qualities. It delights in a watery situation, and is readily propagated by cuttings.*

The leaves of the *Nisinda* have a better claim to the title of discutient, than any other vegetable remedy with which I am acquainted. Their efficacy in dispelling inflammatory swellings of the joints, from acute rheumatism, and of the testicles, from suppressed gonorrhœa, has often

(1) *Sumbhaloo Sumaloo*.

* The following curious remark of *ACOSTA*, on the facility with which this tree is cultivated, shews the high estimation in which the *Nisinda* was held in his time: "Adeo frequens est hujus arboris usus ad medendum in illis regionibus, ut nisi Deus præcisos ramos multiplici fætura renasci faceret, jam diu fuissent consumptæ arbores, aut certe maximi pretii nunc essent." *Aromat. Lib. transi* by *CLUSIUS*, p. 287.

excited my surprise. The success with which the natives employ them in these complaints, has induced some European practitioners to adopt the practice, and I hope it will come into general use. The mode of employing the leaves is simple. A quantity of them, pulled fresh from the tree, is put into an earthen pot, and heated over the fire, to as great a degree as can be borne without pain. They are then applied to the part affected, in as large a quantity as can be conveniently kept on by a proper bandage, and the application is repeated three or four times a day, until the tumor is dispelled.

II. *Medicinal Drugs.*

I. VEGETABLE.

THE following vegetable drugs are imported into Hindustan from the neighbouring countries, none of the plants which yield them being either indigenous, or found in a cultivated state in the Peninsula. The drugs themselves, however, are in common use with the native practitioners, and sold in all the principal bazars.

ASA FŒTIDA. *Hing*⁽¹⁾ H. *Hinga* S.

Ferula Asa fœtida. { Murray, IV. 358.
Woodville, I. 22.

BENZOIN. *Lubán*⁽²⁾ H. and Arab.

Styrax Benzoin. { Murray, IV. 540 and 659.
Woodville, II. 200.

CAJEPUT OIL. *Cajuputu*, Malay.

Melaleuca Leucodendron. { Murray, III. 313,
Woodville, IV. 44.

(1) *Heeng.*

(2) *Looban.*

CAMPHOR. *Cafur*⁽¹⁾ H. *Curfura* S.

Laurus Camphora. { Murray, IV. 445.
Woodville, IV. 66.

CHINA ROOT, *Chob Chini*⁽²⁾ H.

Smilax China { Murray, I. 490.
Woodville, IV. 66.

This root was formerly held in high estimation in Europe, as a remedy for the venereal disease; but has long been superseded by its congener, the *Smilax Sarsaparilla*; yet this last has been, by some authors of great authority, considered as a very inert substance, and scarcely possessing any medicinal virtue whatsoever.* Those who judge more favourably of its efficacy, may, in cases where it cannot be procured, have recourse to the China root, as a substitute. *Dr. Woodville*, after observing that, "like the *Sarsaparilla*, the "China root contains a considerable share of bland "nutritive matter," adds, "that it appeared to him "not less adapted to the auxiliary purposes of medi- "cine."† If the sanative virtue of these roots depends on this nutritive matter, which is probably the case, the China root would seem to claim the preference; as it contains it in a much larger proportion, amounting to upwards of half the weight of the root;‡ but there is much difficulty in appreciating the comparative efficacy of medicines of such moderate activity as the two in question. The China root was formerly much used in the hospitals here; and, as far as I could judge from my own experience, its utility, either as an auxiliary to mercury, or for improving the general health after the use of that remedy, is at least equal to that of the *Sarsaparilla*.

(1) *Kafoor.*

(2) *Chob Cheenee.*

* J. HUNTER, Ven. Dis. p. 371. CULLEN, Mat. Med. p. 200.
DUNCAN, Edinb. New Disp. Ed. 1806.

† Med. Bot. IV. 67. † AIKIN'S LEWIS, Mat. Med. II. p. 331.

CLOVES. *Laung*⁽¹⁾ H. *Lavanga* S.

Caryophyllus Aromaticus. { Murray, III. 333.
Woodville, II. 366,

COLUMBO Root. *Kalumb*, Mosambique.

Radix Colombæ. { Murray, VI. 153,
Woodville, IV. 164.
Asiat. Res. X. 385.

See the interesting account of this valuable root in the 10th volume of the As. Res. It is to be hoped, that by Dr. Berry's meritorious exertions, we may soon have the plant cultivated in this country.

CUBEBS. *Cubab Chini*⁽²⁾ H.

Murray, V. 37.

GALLS. (Aleppo.) *Maju P'hal*⁽³⁾ H. *Máju P'hal* S.

Quercus Cerris. Murray, I. 102.

Quercus Robur. Woodville, II. 346.

GAMBIR. *Gambir* H. from the Malay.

Uncaria Gambeer. Roxb. *Pl. Cor.* III.

Funis Uncatus. Rumph. *Amb.* V. 63.

Nauclea Gambir. Hunter, *Linn. Trans.* IX. 218.

This substance is used, by the inhabitants of the Malay countries, for manducating with the Betel leaf and Areca nut, in the same manner as the Catechu is by the natives of Hindostan. It is prepared from the leaves of the shrub above referred to, (which belongs to a genus nearly allied to the Nauclea,) in two different modes. 1, By boiling the leaves, and inspissating the decoction. 2, By infusing the leaves in warm water for some hours, when a fæcula subsides, which is inspissated by the heat of the sun, and formed into small cakes. The Gambir prepared in this last mode is by far the best. In appearance and sensible qualities, it resembles the Catechu, as also in its medicinal properties. Its taste is powerfully astringent, and at first bitter, but afterwards sweetish. Tried by the

(1) *Laong.*

(2) *Koobab Cheeneç.*

(3) *Majoo P'hal.*

gelatine test, the Gambir appears to contain more of the Tannin principle than any other vegetable astringent; and, were it not for its high price, would be a most valuable material for the preparation of leather.

GAMEOGE *Gahkatu.* Cingalese.

Stalagmitis Gambogioides. Murray, IV. 106 & 654.

MANNA. *Shirkhisht*⁽¹⁾ H. and P. *Terenjabin*, Arab.

Manna Persicum, Fothergill, Phil. Tr. XLIII. 47.

The manna sold in the bazars here, is imported from Bussorah, and is the same with that described by Dr. Fothergill in the paper to which I have referred. The plant which yields it is supposed to be the *Hedysarum Alhagi* (L.) It is a very impure kind, and far inferior in quality to the Calabrian manna.

MYRRH. *Murr* and *Ból* H. *Bóla* S.

Myrrha. { Murray, VI. 213.
Woodville, IV. 167.

NUTMEGS. *Jáéphal*⁽²⁾ H. *Játiphalo* S.

The Mace. *Jawatri*⁽³⁾ H. *Játipatri* S.

Myristica Aromatica. Murray, VI. 135.

Myristica Moschata. Woodville, II. 363.

RHUBARE. *Rheum Palmatum.* *Révand Chíní*⁽⁴⁾ H.

Murray, IV. 362.

Woodville, I. 127.

SAGO. *Sabudana* H.

Sagus, Rumphii. Murray, V. 13.

Sago is procured from the trunks of several other palms beside that mentioned by Murray. An excellent kind is prepared from the tree called, by Rumphius, *Gomutus Gomuto*, (*Amb.* I. 57;) and by Dr. Roxburgh, *Saguerus Rumphii*, (MS.) This tree is also valuable on account of the black fibres which surround the trunk at the insertion of the leaves;

(1) *Sherkhisht.* (2) *Jaephul.* (3) *Juwutree.* (4) *Rewund Cheenec.*

which afford a stronger and more durable cordage for ships than any other vegetable substance.

SALEP. SALIB MISRI,⁽¹⁾ H. and Arab.

Orchis Mascula. { Murray, V. 278.
Woodville, II. 246.

SCAMMONY. *Sakmúnya*⁽²⁾ H. and Arab.

Convolvulus Scammonia. { Murray, VI. 746.
Woodville, I. 13.

SENN A LEAVES. *Sená Mecci*,⁽³⁾ H. Sená, Arab.

Cassia Senna. { Murray, II. 505.
Woodville, III. 446.

2. MINERAL.

A. METALLIC.

LEAD. *Sisa*,⁽⁴⁾ H. *Sisaca*, S.

The white oxide, *Safeda*, H.

The red oxide, *Sindur*,⁽⁵⁾ H. *Sindura*, S.

The semivitreous oxide, *Murdar Seng*,⁽⁶⁾ H. & P.

IRON. *Loha*, H. *Loha & Ayas*, S.

The Carbonate, *Kit'h*,⁽⁷⁾ H. *Mandura & Sinhana*, S.

The Sulphate, *Casis*,⁽⁸⁾ H.

COPPER. *Tamba*, H. *Tamra*, S.

The Subacetite, *Zangar & Pitrai*, H. *Pitalata*, S.

The Sulphate, *Tutiya*,⁽⁹⁾ H. *Tutt'ha*, S.

TIN. *Ranga*, H. *Ranga & Trapu*, S.

ANTIMONY.

The Sulphuret, *Surmeh*,⁽¹⁰⁾ H. *Saubira*, S.

The proper grey ore of antimony is imported from Napal, but a galéna, or sulphuret of lead, is frequently sold for it in the bazars, under the name of Surmeh.

ARSENIC.

The white oxide, *Samul-k'har*,⁽¹¹⁾ H. *Sanc'hya*, S.

(1) *Salib Misree*. (2) *Sooqmooniya*. (3) *Suna Mukkee*. (4) *Seesa*.

(5) *Sindoor*. (6) *Moordar-Sung*. (7) *Keet'h*. (8) *Kusces*.

(9) *Tootiyd*. (10) *Szormu*. (11) *Sum-ool-Khar*.

The yellow Sulphuret, *Hartál*⁽¹⁾ H. *Haritála*, S.

The red Sulphuret, *Mansil*,⁽²⁾ H. *Manah Silah*, S.

QUICK-SILVER. *Pára*, H. *Párada*, S.

The red Sulphuret, *Shengerf*,⁽³⁾ H.

A sub-muriate, *Rascapúr*,⁽⁴⁾ H.

Shengerf, or fictitious cinnabar, is prepared by the natives in a very simple mode. The quick-silver and sulphur are first triturated together, until a black sulphuret is formed, which is put into a glazed earthen pot, similar to those commonly used for dressing victuals. Over this, another vessel of the same kind is placed inverted, and luted to it with clay. Fire is then applied to the undermost vessel, and continued until the whole of the contents is sublimed. The apparatus is then suffered to cool; when a cake of cinnabar is found adhering to the inner surface of the uppermost pot.

Shengerf is used, internally, by the native practitioners, as antispasmodic, and for the cure of cutaneous diseases; but it is employed much more efficaciously by them in fumigation, for such cases of the venereal disease as are attended with ulcers in the nose, mouth and throat. The fumigation is conducted in the usual mode, by making the patient, with a blanket thrown over him, inhale the fumes of the *Shengerf* thrown on red hot iron. In this mode, the cure is performed very rapidly, but it frequently causes a violent and dangerous ptyalism; nor is the patient always secured by it against a relapse of the disease.

Rascapúr is another mercurial preparation, in great estimation, and much used by both the Hindu and Muhammedan practitioners. There are various modes of preparing it, but none of them essentially different

(1) *Hurtal*.

(2) *Munsil*.

(3) *Shungurf*.

(4) *Ruskupoor*.

from the others. In all of them quick-silver and Muriate of Soda are employed in equal parts, with the addition of either Sulphate of Alumine or Sulphate of Copper. By the kindness of *Dr. Hunter*, I have now lying before me three different processes for making Rascapúr; one taken from a Persian, and the two others from Sanscrit pharmacopœias. The first, which is the simplest, and least uncertain of the three, is literally as follows :

“Take Quick-silver, Armenian Bole, Allum, (‘some prefer blue vitriol, but allum is better,’) Rock Salt, of each nine parts. Rub the whole in a mortar with water, and let them harden. Then put the mass into a glazed earthen vessel, and place inverted, above it, another similar vessel, plastered with ashes, and the milk of Datura. Lute them together with Philosopher’s clay, and keep them three days and three nights in a fire made with cow dung. Then let the vessels cool, and take out what adheres to the bottom and sides of the upper vessel. This is the Rascapúr.”

The Quick-silver, in this preparation, is combined with a less proportion of the muriatic acid, than in corrosive sublimate, but with a much greater proportion of it than in calomel. It is used by the native practitioners for all the purposes for which the two preparations just mentioned are employed by the European. It requires, however, to be prescribed with great caution; as it is not only one of the most powerful mercurials that can be ventured on for internal use, but uncertain in its strength, on account of the different processes by which it is made. European practitioners need never, I think, have recourse to it; as Quick-silver may always be procured from the bazars, with which safer and equally efficacious remedies may be prepared.

B. SALINE.

NITRATE OF POTASH. *Shora*, H. *Yavac Shora*, H.

SULPHURIC ACID. *Gundac-ca Atr*,⁽¹⁾ H.

SULPHATE OF SODA. *C'hara Nún*,⁽²⁾ H.

SULPHATE OF ALUMINE. *P'hitcarí*,⁽³⁾ H. *Sp'hatica*, S.

IMPURE CARBONATE OF SODA. *Sejji-mitti*,⁽⁴⁾ H. *Sorjica*, S.

MURIATE OF AMMONIA. *Nosáder*,⁽⁵⁾ H.

MURIATE OF SODA. *Nemec*,⁽⁶⁾ H.

MURIATE OF SODA, fused with the } *Bit-laban*⁽⁷⁾ & *Cála*
fruit of *PHYLLANTHUS EMBLICA*. } *Nemec*,⁽⁸⁾ H.

The following process for making this salt, was communicated, by a native druggist, to *Mr. Turnbull*, at Mirzapore, and actually performed in his presence. *Mr. Colebrooke* informs me, that it nearly corresponds with the process which he found described in a Persian treatise on medicines. "Fifty-six pounds of Sammур "salt (a fossile muriate of Soda) are mixed with twenty "ounces of dried Aonlas, (Emblic Myrobalans.) "One fourth of these materials is put into a round "earthen pot, with a narrow mouth, which is put on "a fire-place made of clay. The fire-place has a hole "at the bottom, for introducing the fire-wood. After "the fire has been lighted about an hour, and the ma- "terials in the pot appear to be melted, the rest of "the materials is added by degrees. The whole is "then exposed to a strong red heat for about six "hours. The fire is then allowed to die away, and the "pot to cool; which, upon being broken, is found to "contain about forty-eight pounds of *Cála Nemec*, or "Bit-laban."

The Bit-laban, or Bit-noben, as it is sometimes called, is a medicine in great estimation with both the Hindu and Muhammedan physicians; but

(1) *Gunduk-ka-utr.* (2) *K'hara Noon.* (3) *P'hitkaree.* (4) *Sujee-muttee.*
(5) *Nosadur.* (6) *Numuk.* (7) *Bit-lubun.* (8) *Kala-numuk.*

particularly with the former. It is very generally used as a tonic in dyspepsia and gout, as a deobstruent in obstructions of the spleen and mesenteric glands, diseases to which children in Hindostan are peculiarly liable; and as a stimulant in chronic rheumatism and palsy. It is also one of the many remedies employed as a vermifuge. For a further account of this salt, see "A Dissertation on the Bit-Noben, by *John Henderson*, "of the Bengal Medical Establishment. 8vo. Lond. "1803."

Mr. Henderson, having carried some of the Bit-Noben to England, it was analysed by *Mr. Accum*, and the result was as follows:

Four hundred and eighty grains of the salt yielded

Black oxide of Iron, -----	6 Grains.
Sulphur, -----	14
Muriate of Lime, -----	12
Muriate of Soda, -----	444
	476
Loss, -----	4
	480

NICHOLSON'S *Journal for August, 1803.*

From this analysis we may conclude, that the virtues of Bit-laban, beyond what may be fairly ascribed to the Muriate of Soda, depend on the proportion of iron contained in it. This metal appears to have been obtained, during the process, from the Myrobalans.

IMPURE BORATE of SODA. *Sohaga*, H. *Tancána*, S.

C. INFLAMMABLE.

SULPHUR. *Gandhac*,⁽¹⁾ H. *Gandhaca*. S.

(1) *Gund-huk.*

PETROLEUM. *Mitti tel*⁽¹⁾ II. *Nest*, Arab.

This mineral oil is imported from the Burma country. See an account of the Petroleum wells near Rainanghong, by Captain Cox, in the 6th Vol. of the As. Res.

The oil is met with in the bazar of very different degrees of purity; sometimes perfectly limpid and thin; at other times of a dark brown colour, and of the consistence of syrup. The first sort only should be used in medicine. It has a strong, penetrating, not disagreeable smell, and a pungent, acrid taste. It is very generally employed by the native practitioners externally, as a stimulant in paralytic complaints, and in chronic rheumatism. In this last disease, I can, from my own experience, recommend it as an efficacious remedy; having found much greater benefit from it, than from the more costly Cajeput oil, which I had previously used.

AMBER.* *Cah-ruba*,⁽²⁾ H. and P.

3. ANIMAL.

Musk. *Meshk.* (3) H. and P.

(1) *Mittee tel.*

(2) *Kuhrooba.*

(3) *Mushk.*

* A concrete, resinous substance is imported from *Bussora*, which passes, at the *Calcutta* Custom-house, and is also sold in the bazar, under the name of *Cahruba*, or *Amber*; but which I found, on examination, to be real *Copal*, the resin so much used, in *England*, as a varnish. This substance is used for the same purpose by the Coach-makers in *Calcutta*. It resembles so perfectly the finest amber, in colour and texture, that the jewellers make necklaces of it, which pass for those of genuine *Amber*, and from which it is extremely difficult to distinguish them. The *Copal* is, I believe, the produce of the *Vateria Indica*, a tree which grows on the *Malabar Coast*. I was favored by Dr. ROXBURGH with a specimen of the resin of that tree; and found it, both in appearance and chemical qualities, to coincide entirely with genuine *Copal*.

AMBERGRISE. *Amber*,⁽¹⁾ H. *Ambara*, S.

Considerable quantities of this substance are sometimes brought to Calcutta by the Commanders of trading vessels, who find it floating on the Indian Ocean, or adhering to rocks, chiefly among the Moluccas, and other islands to the eastward. It is esteemed, by the natives, as the most agreeable of all perfumes, more especially by the Mahummedans. Their physicians consider it also as an Aphrodisiac, a class of medicines of great importance in their pharmacopœias, but which probably contains not a single article that has any claim to that title.

HONEY. *Medhú*,⁽²⁾ H. *Shehed*,⁽³⁾ P. *Medhú*, S.

WAX. *Mom*, H. and P. *Medhúch-hishta*, S.

LAC. *Lác'h* and *Láh*, H. *Lacsha*, S.

HIRUDO MEDICINALIS, (L.) *Jonc*,⁽⁴⁾ H. *Jelaucha*, S.

Leeches are found, in stagnant ponds and ditches, in every part of Hindustan. In a country in which general bleeding is so much seldom required, or admissible, than in cold climates, and where consequently the practitioner must more frequently have recourse to topical bleeding, it is fortunate that this animal, so convenient for the latter purpose, can at all times be procured.

MELÖE CICHOEI. (L.) *Telini*⁽⁵⁾ H.

A very full and accurate description of this species of Melöe, has been given in the 6th Vol. of the Asiatic Researches, by Colonel Hardwicke, to whom we are indebted for this valuable acquisition to our Materia Medica. The insect abounds in every part of Bengal, Bahar and Oude. In the rainy season, during which it is in its most perfect state, it is found feeding on the flowers of the various species of Hibiscus and Sida, and is

(1) *Umbur*. (2) *Mud* or *Mudhoo*. (3) *Shuhud*. (4) *Jonk*. (5) *Telinee*.

readily distinguished, by the three transverse, undulated black bands on its yellow Elytra, which constitute its specific character.

The *Meloe Cichorei*, when applied to the skin, produces effects precisely similar to those caused by the Spanish blistering fly, for which this insect will be found a perfectly adequate substitute, either as an external stimulant, a rubefacient, or for raising a complete blister, according to the mode in which it is applied.

The flies should be gathered in the morning or evening, and immediately killed by exposing them to the steam of boiling vinegar. They should then be thoroughly dried by the heat of the sun, and afterwards put into bottles to preserve them from humidity.

Tab. 2
Haemaphysalis Pandurata.



In the famous *Tanjore* pill, mentioned by the ingenious Docter PATRICK RUSSEL, as being in such estimation on the coast, for the cure of the bite of the serpent, we find arsenic is an ingredient; a stimulus of so powerful a nature, that it destroys life, on common occasions, in a very minute quantity. In this district, the natives use the stimulus of heat; it being a common practice with them, to place near a strong fire persons bitten by snakes. They also administer ardent spirits, and hot spices internally; and further compel the patient to take as much exercise as he possibly can. It is worthy of remark, that the remedies they thus make use of, from the experience and observation of ages, in countries where accidents from the bite of serpents must be particularly frequent, should tend to confirm the principle of cure I have pointed out from my case, namely, that of excitement from the use of stimuli.

It were foreign to such a communication as this, to enter into a discussion of the several opinions that have been entertained, of the nature of the poison of the serpent, and of the particular manner in which it acts, upon being received into the human body. The many experiments, that have been made with it, upon various animals, have tended only to establish the degree of its virulence in the different species of serpents; for the subjects of these experiments, being unable to communicate what they felt and suffered from the poison, whatever opinion was formed, of the manner in which it acted, is entirely conjectural; and accordingly, every writer, who has made it the object of his inquiry, has left it in the original state of uncertainty, in which he found it.

VII.

DESCRIPTIONS

OF SEVERAL OF THE

Monandrous Plants of India,

BELONGING TO

THE NATURAL ORDER,

CALLED

Scitamineæ by LINNÆUS, *Cannæ* by JUSSIEU, and
Drimyrhizæ by VENTENAT.

BY W. ROXBURGH, M. D.

THE venerable founder of the Society, the late Sir WILLIAM JONES, justly observes, when describing one of his favourite plants, BHU'CHAMPACA, *Asiatic Researches*, 4. 243.

“ Among all the *natural orders*, there is none, in
“ which the genera seem less precisely ascertained
“ by clear *essential characters*, than in that, which
“ (for want of a better denomination,) has been called
“ *Scitamineous*; and the judicious RETZ, after con-
“ fessing himself rather dissatisfied with his own
“ generic arrangement, which he takes from the *bor-
“ der* of the *corol*, from the *stamen*, and principally
“ from the *anther*, declares his fixed opinion that
“ the genera in this order will never be determined

" with absolute certainty, until all the scitamineous
" plants of India shall be perfectly described.

KŒNIG was the first botanist of the Linnæan School, that had resided long enough in *India*, to acquire any tolerable knowledge of the scitaminean plants of this country; for it is only in the living, or recent state, that their flowers can be well understood; particularly the nice structure of the *anther*, which is here of more importance in determining the genera, than in any other order. From the labours of KŒNIG, RETZ was enabled to make his arrangement, and there first pointed out the *anther* as the chief organ; which has very lately been successfully followed up by ROSCOE, in his "*new arrangement of the plants of the Monandrian Class, usually called Scitamineæ.*" *Trans. of Linn. Soc.* 8. 330. To these authorities, I gladly add my own experience and suffrage.

Although amongst the plants of this very natural order, there is a wonderful similarity, yet they very naturally separate into two divisions. To the *first* belong such as are truly herbaceous, (that is, perishing annually down to the root,) viz. all the species of *Curcuma*, *Kœmpferia*, *Zingiber*, and *Globba*, as well as our solitary species of *Hedychium*. To the *second*, or more permanent division, belong *Canna*, *Phryniuim*, *Amomum*, and *Alpinia*. Our single species of *Costus* forms a link, which joins these; for its stems are sometimes biennial, or more durable, though in general herbaceous.

In all, the *root* is of two or more years duration. That part, which I call the *bulb*, is solid, generally of an ovate shape, and gives support to all the parts of the plant which appear above ground; as well as to the creeping, jointed, often palmate tubers; from these, as well as from the base of the bulbs, spring

the proper fibrous roots, which penetrate deep into the soil; and in some of the genera, many of them end in oblong pendulous tubers.

The *leaves*, in most of the genera, are bifarious, (pointing two ways,) their shape is very generally lanceolar,* or lanceolate,† with entire margins, and fine subulate, or filiform points. The *leaf-stalks*, or *petioles*, are invariably sheathing, or invest whatever is within them in form of sheaths, or tubes. From a single strong nerve, or rib, numerous, simple, delicate veins take their rise, and run to the margin, forming with the nerve, an angle of about thirty degrees.

The *inflorescence* is pretty constantly the same in each genus, but differs widely in the different genera.

All *Scitaminean* flowers consist of a superior *calyx*, an irregular, one-petalled *corolla* with double border.‡ A single *filament*, inserted on some part of the corolla, generally on the mouth of the tube, opposite to the lip; supporting a *single*, or *double anther*, which is naked, or variously appendaged. A *germ*, for the most part three-celled,§ which, in those genera with a double anther, and whose style remains free down to its insertion on the germ, is invariably crowned with two small glandular bodies, (*nectaria* of KŒNIG, and RETZIUS;) one on each side of the base of the

* Tapering equally at each end.

† Broadest at, or near the base, and from thence tapering to the apex.

‡ The exterior border is uniformly divided into three segments, which cannot form any good part of the *essential character*; but I am inclined to think the interior divisions may be advantageously employed therein; and it is by employing this part that I differ most from ROSCOE, whose elegant, concise method I admire much.

§ The only exception, known to me at present, is *Globba*; there the germ is one-celled, with the seeds attached to three parietal receptacles.

style, within the bottom of the tube of the corolla. The *style*, in all the genera with a double anther, is of a very delicate, filiform structure, with its apex lodged in a deep groove between the lobes of the anther, elevating the ciliate, infundibuliform *stigma*, a little beyond the apex of the anther. In the two genera with a single anther (viz. *Canna* and *Phrynum*,) it forms part of the tube of the corolla ; above that it is robust, and supports itself. The *seed vessel*, in all except *Globba*, is three-celled, each containing, (except in *Phrynum*,) more seeds than one, which in most of the genera are *arilled*, and, except in *Globba*, attached to the axis of the capsule.

MONANDRIA.

MONOGYNIA.

* *Anther simple.*

1. **CANNA.** *Style* growing to the tube of the corolla, above spatulate. *Stigma* linear. *Capsule* 3-celled, many-seeded.
2. **PHRYNUM.** *Style* growing to the tube of the corolla, above uncinate. *Stigma* infundibuliform. *Capsule* tricoccous.

** *Anther double.*

3. **HEDYCHIUM.** *Corolla* with interior border 3-parted, and resupinate. *Anther* naked. *Capsule* 3-celled, many-seeded.
4. **KÆMPFERIA.** *Corolla* with interior border 3-parted. *Anther* with bifid crest. *Capsule* 3-celled, many-seeded.
5. **CURCUMA.** *Corolla* with interior border 3-parted. *Anther* bicalcarate. *Capsule* 3-celled, many-seeded.
6. **AMOMUM.** *Corollo* with interior border unilabiate. *Anther* with entire, or lobate crest. *Capsule* 3-celled, many-seeded.
7. **ZINGIBER.** *Corollo* with interior border unilabiate. *Anther* beaked. *Capsule* 3-celled, many seeded.
8. **COSTUS.** *Corollo* with interior border subcampanulate. *Anther* on the centre of the lanceolate filament. *Capsule* 3-celled, many-seeded.

9. **ALPINIA.** *Corollo* with interior border unilabiate. *Anther* naked. *Capsule* 3-celled, many seeded.

10. **GLOBBA.** Filament long, slender, incurved, with tubular winged base. *Capsule* one-celled, *receptacles* parietal; seeds many.

1. CUNNA.

GEN. **CHAR.** *Anther* single, attached to the edge of the petal-like filament. *Style* spatulate, growing to the tube of the corolla. *Stigma* linear. *Capsule* 3-celled, 3-valved. *Seeds* several, naked.

9. **CUNNA indica.** *Linn. sp. pl. ed. Willd.* 1. 3.

Leaves ovate-lanceolate. Segments of the inner border of the corolla lanceolate, and bidentate.

Krishna-tamara of the *Telingas*.

Katu-bala, *Rheed. mal.* 1. t. 43.

Cannacorus, *Rumph. amb.* 5. t. 71.

The red and yellow are common in every garden over *India*, and in flower all the year. The parts of the corolla are exactly alike in both. The yellow variety of the *Hortus Kewensis*, *C. lutea* of *Roscoe*, must therefore be different, as the inner limb of the corolla is there bifid.

CUNNA INDICA.

Katuballa. RHEED. *Daun Tassibeh.* RUMPH.

Hind. *Sabbajayá, Sarvajayá.*

Beng. *Sarbajayá.* The red variety, *Lál* *sarbajayá.*

Malab. *Catubálá, Rána-céli.*

Malay. *Dáneh-tasbih.*

In a catalogue of *Indian* plants (As. Res. Vol. IV. p. 236.) *Vanacéli* is given as the *Sunscrit* name of the *Canna*. That name seems to have been assumed by Sir WILLIAM JONES from the *Hortus Malabaricus* of VAN RHEEDE; who observes, that the *Bráhmanas* of *Malabar* call this plant *Rana Queri*. On the plate, the word engraved in *Nagari* characters is *Rána-céli*, whence Sir WILLIAM JONES appears to have deduced the *Sanscrit* *Vanacéli*. But the word, as exhibited by VAN RHEEDE, corresponds to the vernacular name stated by him, *Katubala*, answering likewise to the *Portuguese* *Figueira de Mato*, and signifying wild plaintain or banana; the plant being so denominated from the fancied similarity of the leaves.

Turned into *Sanskrit*, the name would therefore be, not *Vanaceli*, but *Vana cadali* or *Aranyacadali*; which accordingly does occur in a *Sanskrit* treatise on the *Materia Medica*, entitled *Rájanighantu*; and is there stated as corresponding with the names *Ránacéli* and *Có-bálé* in the *Marahatta* and *Canara* languages. The author of that treatise, however, understood these to be names of a plant bearing an esculent fruit: for he has so placed it in his systematic arrangement of plants by their uses. It must be inferred, that, although the *Canna indica* may bear the appellation of *Rána-céli* in *Malabar*, where VAN RHEEDE's enquiries were conducted, that name belongs to one of the wild species of *Musa* in other parts of the *Dekhin*.

The native gardeners at *Nágpur*, and I believe in *Hindustan* likewise, call this plant *Akílbehra*, which is apparently corrupted from the Arabic *Akik-ulbehru* qu. *Carnelion of the sea*. In *Calcutta* it is named by the gardeners *Sabbajayá*, which is probably meant for *Sarvajayá*, a title of the Goddess *DURGA* "all conquering." This name, as I am informed, is also in use in *Hindustan*.

The seed of the *Canna indica* is used in rosaries; whence the *Malay* name *Daun Tassibeh* (i. e. *Daneh tasbih*) as is remarked by RUMPHIUS. *Note by the President.*

2. PHRYNIUM.

GEN. CHAR. *Anther* single, terminal on a short erect filament. *Style* growing to the tube of the corolla. *Stigma* infundibuliform. *Capsule* 3-celled, 3-valved. *Seed* solitary, arilled at the base. *Embryo* uncinate, and furnished with a *perisperm*.

Hitherto I have found only three plants that can be referred to this genus, viz. LOUREIRO's *Phylloides placentaria*, *Thalia cannaformis* of FORSTER, and a new one from the late Dr. ANDERSON's garden at *Madras*. These three evidently belong to the same family; and I prefer *Phrynum*, because one of our species is that from which WILLDENOW constituted this genus; and the other two agree very perfectly. (The other species of *Thalia*, viz. *geniculata* and *dealbata* are unknown to me, except by imperfect descriptions.) All the three are perennial, with similar, jointed, slowly creeping roots. Their habit is however different; yet in their generic character they agree particularly well; the *calyx*, *corolla*, *stamen*, and *pistil* being almost exactly the same; and in *dichotomum*, and *capitatum*, the tri-

coccus capsule; smooth, round, partially arilled, nuciform seeds; perisperm, and hooked embryo, are perfectly similar. The fruit of *virgatum* I have not yet seen.

1. **PHRYNIUM dichotomum. R.**

Shrubby, dichotomous. Leaves cordate. *Arundastrum Tonckat seytan.* *Rumph. amb. 4. t. 7.* *Thalia cannaformis.* *Linn. sp. pl. ed. Willd. 1. 16.* *Donax Arundastrum.* *Loureir. Cochinch. 15.* is no doubt this very plant, but whether AUBLET's *Maranta Tonchat*, or not, I cannot presume to say.

A native of various parts of *India*, *Malay Islands*, &c. delights in humid, or watery situations. Flowering time the hot, and rainy seasons. Seed ripe in July and August.

PHRYNIUM DICHOTOMUM.

Tonckát Seytan. *RUMPH.* *Thayng payng.* *BUCH.*
Beng. *Muctapata, Mádur-páta, Páttipatá.*
Malay. *Takat Shaitán.*

Mats made of the split stems of this plant, being smooth and particularly cool and refreshing, are termed, in *Hindi*, *Sital-páti*, which signifies a cool mat: whence the plant itself is said to bear the same name. Suspecting, however, this to be a misappropriation of the term, I have inquired of natives of the eastern parts of *Bengal*, who assure me, that the plant is named *Muctapatá*, *Mádurpúta* or *Páttipatá*, and that the mat only is called *Sitalpáti*.

This term is in use in *Bengal*, as well as *Hindustan*, and is composed of words of *Sanskrit* origin. It does not, however, appear that the corresponding compound term *Sitala-pattica* is employed in the *Sanskrit* language, as a name either for the plant, or for the mat made of its stem. *Note by the President.*

2. **PHRYNIUM virgatum. R.**

Stems simple. Leaves bifarious, lanceolate.

Found in the late Dr. ANDERSON's garden at *Madras*, and from thence introduced into the Botanic Garden at *Calcutta*, where it flowers in August, but has not yet produced ripe fruit.

The roots are ligneous, perennial, and creeping.



Cephalatum.

Tub. I
Yucca

Stems also perennial, numerous, erect, or oblique, according to their place in the clump; (for they grow in tufts, many springing from the same root;) quite simple, polished, deep green, jointed: lower joints considerably swelled; general height from 6 to 8 feet. *Leaves* bifarious, short-petioled on their sheaths, lanceolate, polished, from 6 to 18 inches long. *Inflorescence* long, slender, curved, dichotomous, terminal *spikes*. *Flowers* rather small, pure white, inodorous. *Calyx*, *corolla*, &c. as in the genus.

3. *PHRYNIUM capitatum*. Linn. sp. pl. ed. Willd. 1. 17.

Stemless. Leaves radical.

Phyllodes placentaria. Loureir. 'Cochinch. 17.

Naru-kila. Rheed. mal. 11. t. 34.

Cadalí of the Bengalese, which also signifies a plaintain.

A native of *Bengal*, and like the former species, thrives best in a wet soil; and flowers about the beginning of the rainy season.

3. *HEDYCHIUM*.

GEN. CHAR. *Corolla* with long slender tube; both borders three-parted; inner resupinate. *Anther* double, naked. *Capsule* 3-celled, 3-valved. *Seeds* numerous, arilled.

1. *HEDYCHIUM coronarium*. Linn. sp. pl. ed. Willd. 1. 10.

Curt. Bot. Mag. 708. Retz. obs. 3. 73.

Gandsulium. Rumph. amb. 5. t. 69. f. 3.

Gooruk-nadtah, also Dulala-champa of the Bengalese.

I have only seen this most beautiful plant in its cultivated state, though a native of various parts of *India*; the *Malay Archipelago*, &c. It rises with a straight, herbaceous *stem*, furnished with alternate, bifarious, lanceolate *leaves*; and a terminal, oblong, compactly imbricated *spike*, of very large, pure white, exquisitely fragrant *flowers*, which continue to expand in succession, during the greater part of the rainy season.

With RETZIUS and JUSSIEU, I was long inclined to consider this a species of *Kæmpferia*. They agree in being herbaceous; in the long slender tubes of their corollas, in both the borders being three-parted, with all the segments exceedingly alike; and lastly in the structure, and contents of their germs.

In the following particulars they disagree, *Hedychium* being caulescent, with terminal inflorescence; whereas in *Kæmpferia*, all the species (known to me,) are stemless, with radical leaves, and spike. In the former, the interior border of the corolla is resupine, (that is, the large bifid lobe is uppermost, the two smaller under it, having the filament between, with the two polliniferous grooves of the double anther on the upper side, fronting the broad, two-lobed lip;) and lastly, in having a crestless anther. For these weightier reasons, I am now induced to consider it a distinct genus. The inverted position of the stamen, and inner border of the corolla, seem fully as cogent as the nakedness of the anther.

4. KÆMPFERIA.

GEN. CHAR. *Corolla* with long slender tube, and both borders three-parted. *Anther* double, surmounted with a two-lobed crest. *Capsule* 3-celled, many seeded.

This genus, as it now stands, is neat, and natural. The plants that compose it are all natives of *India*. They have all tuberous, biennial *roots*; no *stem*; their *leaves* radical, and herbaceous; the *inflorescence* a lateral, radical *spike* in *rotunda*; in the other three central (that is, rising in the centre of the leaves.) The superior *calyx* is subcylindric, with contracted, unequally divided mouth. The tube of the *corolla* remarkably long, and slender; the lower segment of the inner border, answering to the *Lip*, or *Nectary*, is large, two-lobed, and more highly coloured than any

other part. The characteristic crest of the double anther, large and bifid, or bidentate. KŒNIG's *nec-tarial bodies* subulate. The *stigma* infundibuliform; and the *germ* 3-celled, with many seeds in each, attached to the axis. The ripe *seed vessel* has not been seen, so rarely do they arrive at that state; I cannot therefore say whether the seeds are arilled, or naked.

1. **KÆMPFERIA Galanga.** *Linn. sp. pl. ed. Willd.* 1. 15.

Leaves sessile, subrotund. Spikes central. Upper segments of the inner border of the corolla oval.

Sonchorus. *Rumph. amb.* 5. t. 69. f. 2.

Katsjula-kelengu. *Rheed. mal.* 11. t. 41.

Alpinia sessilis. *Retz. obs.* 3. p. 62.

Chandra-mula of the *Bengalese*.

I have only found this plant in its cultivated state. KŒNIG found it wild in the vicinity of *Malacca*. In *Bengal* it blossoms during the rainy season.

Sir JOSEPH BANKS has been so kind as to ascertain that the dried root of this plant is unknown to the druggists in *London*.

Note by Dr. CAREY.

" This plant, which is said to be very common on the mountainous districts beyond *Chatgong*, is called *Camala*. I find on further enquiry, that it is cultivated by the *Jumma Mugs*, and by them brought down and sold in the markets, under the above name, to the people of *Bengal*, who use it as an ingredient in their betle."

2. **KÆMPFERIA rotunda.** *Linn. sp. pl. ed. Willd.* 1. 15.

Leaves oblong (coloured.) Spikes radical, and before the leaves. Upper segments of the inner border of the corolla lanceolar, acute.

Malan-kua. *Rheed. mal.* 11. t. 9.

Bhúchampaca. *Asiatic Researches.* 4. p. 242.

Bhúchampac, or Bhúichampa of the *Bengalese*.

A native of various parts of *India*. In *Bengal* it blossoms during the hot season, when the plant is destitute of leaves. See Sir W. JONES' elegant de-

scription of this charming plant, above quoted, under the *Sanskrit* name *Bhúchampaca*.

KÆMPFERIA ROTUNDA.

This plant derives its name of *Bhúchampa*, or Ground *Michelia*, from the radical situation of the spike, joined with a fancied resemblance of the flower to the *Michelia Champaca*. Another denomination (Malan-kuwa,) by which it is known in *Malabar* according to VAN RHEEDE, is by him explained as signifying mountain ginger.

From the vernacular name first mentioned, which is composed of *Sanskrit* words, the corresponding *Sanskrit* name is inferred: and authority for it is found in a vocabulary of the *Sanskrit* language, where the following synonyma are added: *Támrapushpa*, *Sidd'ha-band'hu Drughana*. The first of these names indicates, that the flower is of the colour of copper; which may perhaps be reconciled to the purple hue within the blossom of this Kæmpferia. *Note by the President.*

3. KÆMPFERIA angustifolia. R.

Leaves radical, lanceolate. Spikes central. Upper two segments of the inner body of the corolla linear-oblong, obtuse.

Canjan-boora of the Hindoos.

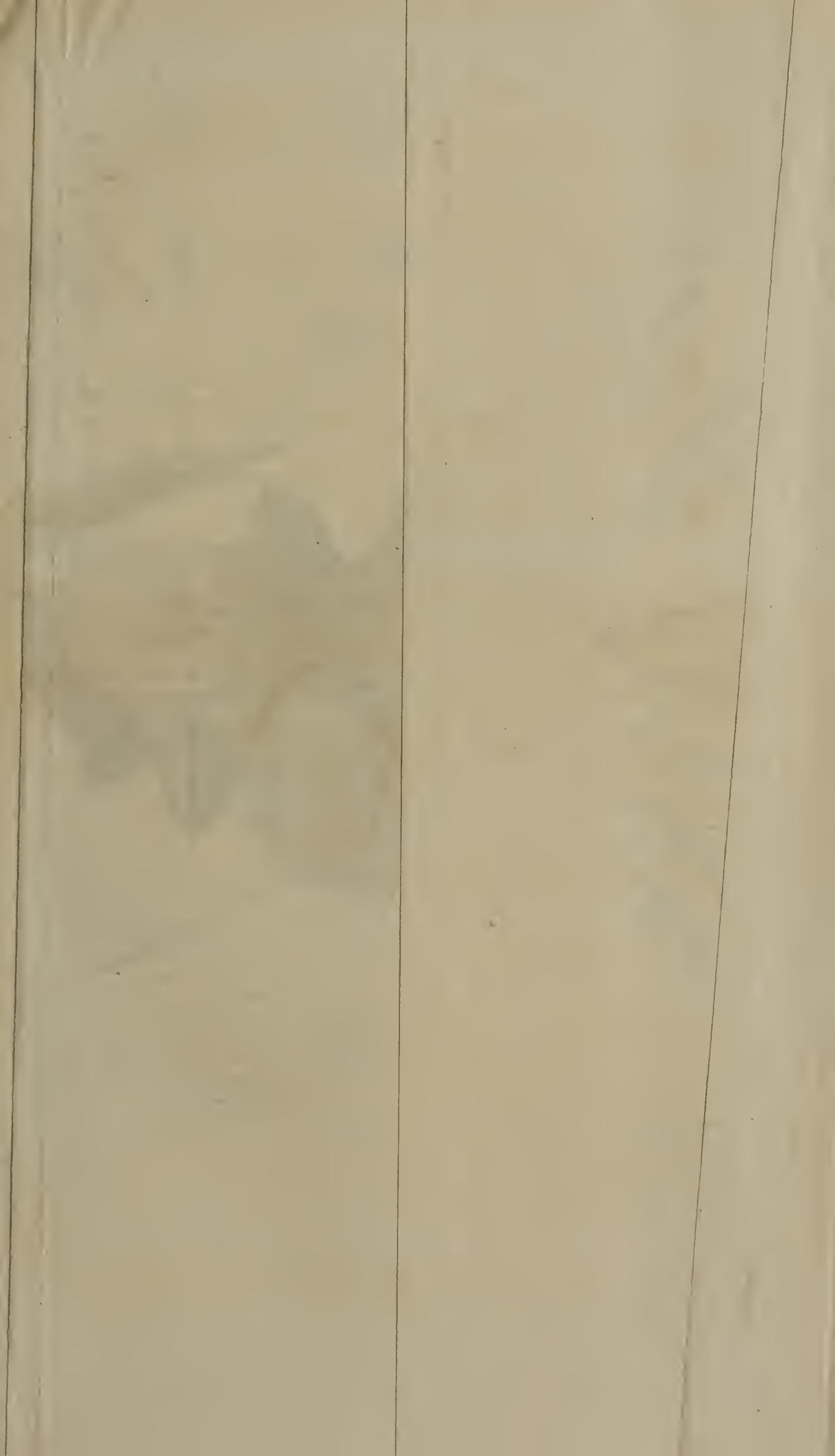
A native of *Bengal*, where it blossoms during the rains. Dr. CAREY informs me that it is known amongst the native gardeners by the name *Madamannirbisha*, and used as a remedy for cough, for which purpose a small quantity is mixed up with their *Bettle*.

4. KÆMPFERIA pandurata. R.

Leaves petioled, broad-lanceolar. Spikes central. Upper two segments of the inner border of the corolla obovate, obtuse; inferior panduriform.

Zerumbet claviculatum. *Rumph. amb. 5. t. 69. f. 1.* and I could almost wish to quote *Manja-kua*. *Rheed. mal. 11. t. 10.* although already referred to by LINNÆUS for *Curcuma rotunda*, a plant I have never met with, if this be not it; and again by ROSCOE for his *Kæmpferia ovata*, which seems to differ from our plant, in the shape of the leaves, and nectary, or lip.

A native of *Sumatra*. In this garden it flowers in July and August.





5. CURCUMA.

GEN. CHAR. *Corolla* with both borders three-parted. *Anther* double, base bicalcarate. *Capsule* 3-celled. *Seed* numerous, arilled.

The plants of this genus, are the most easily distinguished of all the *Scitaminean* tribe; *Globba* not excepted. The exact uniformity of the double, crestless, calcarate anther, is alone a sufficient mark to know them by. But unfortunately, this uncommonly great similarity extends to almost every other part; which renders it so difficult to distinguish the species,* that without the aid of colour, I should despair of making their specific characters discriminative. From daily habit I find no difficulty in recognizing them, yet it is by no means easy to find words that will convey that knowledge to others.

GENERAL DESCRIPTION.

In this family, as well as in the other herbaceous genera, the root is biennial, and consists of what I shall call *Bulbs*, *Tubers*, and *Fibres*. The former are, during the first year, like other bulbs, formed in the centre of the bases of the sheaths of the leaves; and may, during this period, be called phyllophorous receptacles. These *bulbs* have on their opposite sides, a vertical row of *buds*, corresponding with the number of the bifarious leaves, and sheaths, (there being one in the axil of each,) which grew on the bulb. From these *buds*, or eyes, issue the *palmate tubers*, which proceed nearly horizontal, in opposite directions, and branch out, more or less, according to the nature of the plant, &c. From the lower part of the bulbs, the fibres, or genuine roots, chiefly spring; these are strong, thick, long fibres, with numerous small fibrils from their sides; penetrate deep into the

* I say species, because their disagreements, or marks, by which I shall attempt to discriminate them, are, so far as my experience goes, invariable; continuing unchanged year after year.

soil, in various directions ; and, in by far the greater number of species, if not in all, several of them terminate in a single, oblong *tuber*. These are invariably less deeply coloured, and less fragrant than the ovate bulbs, and palmate tubers of the same plant. In various parts of *India*, the natives prepare, from these tubers, and from no other part, a very fine, pure white *starch* or *fecula*, which they use medicinally, and as an article of diet. It is every way like what is met with under the name *arrow-root*; and the process for obtaining it is exactly as described by Dr. WRIGHT, for obtaining that substance from the roots of *Maranta arundinacea*. That followed by the *Malays*, is mentioned by RUMPHIUS in his *Herbarium Amboinense*. 5. P. 171.

All the above described parts lie dormant in the ground, the whole of the cool season ; analogous to the winter in *Europe*; and on the approach of the rains, the buds on the opposite sides of the bulbs, which had remained unproductive during the first year, (that of their formation,) and on the apexes, rarely the alternate buds, sometimes found in two rows on opposite, (upper and under) sides, of the palmate tubers; begin to swell, and produce the plants of the advancing season, which perish on the approach of the winter, &c. In no instance have I found the pendulous tubers productive. They seem solely intended by Providence for the use of man.

It may be proper to observe, that all the descriptions, and figures of the roots of the plants of this genus, are taken when in their most perfect state ; that is, during the winter, or cool season, when no other part exists.

In all the species, the *leaves* are radical ; as it is only their sheaths that form the resemblance of a short *stem*. They are bifarious, and herbaceous ;

making their appearance with the first showers in April, or May ; and perish about the beginning of the cool season, in November.

The *inflorescence* is constantly a simple, erect *scape*, of a few inches in length ; either lateral, that is, rising from the root, distinct from the leaves, and generally with or before they appear ; or central, that is springing from their centre, when they have attained their greatest luxuriance ; supporting, in both cases, in loosely imbricate, simple, subcylindric, erect, *comose spike*. The *coma* is composed of more highly coloured *bractes* than those of the body of the spike, and they are for the most part, if not always, sterile. The flower-bearing *bractes* which surround the body of the spike, are nearly alike in all, and have their lower margins united to the backs of the lower half of the next two immediately within, and above ; forming pouches for the flowers, of which there are generally three, four, or five in each, expanding in succession ; and are mixed with some small proper bractes, which help to form the fascicle. The *flowers* are more or less yellow in all ; the two upper segments of the interior border are confined, in an erect, or somewhat incurved position, by the conical, acute apex of the upper segment of the exterior border ; these three form a vault over the anther and stigma, giving to the whole the appearance of a ringent corolla. The *lip* or lower segment is large, more highly coloured, and generally emarginate. The *filament* short, and broad ; standing between two superior segments of the inner border, opposite to the lip. *Anther* double ; the lobes separated by a deep groove, through which the style passes ; the lower end of each lobe ends in a large conspicuous *spur*, which for these twenty years past, I have considered the *essential character* of the genus. *Style* filiform. The *nectarial bodies* which

embrace its base, are here subulate. The *stigma* is somewhat bilabiate, and infundibuliform, and generally ciliate. The *germ* is superior, 3-celled, with numerous seeds in each, attached to the axis. This genus, like other plants abounding in other means of extending, or continuing the individual, very rarely ripen their seed; when they do, the progress is rapid, three or four weeks being the usual time between the flower and seed. The *capsule* is oval, smooth, pale straw colour, thin, and nearly pellucid, 3-celled, but there is no regular division into valves. When the seeds are ripe, the elasticity of the segments of the arils bursts the vertex into various portions, from whence the seeds are soon expelled, by the elastic power of the aril. *Seeds* several in each cell, arilled, shape various, but the most prevailing is oblong. *Aril* cut to the very base, into several slender, unequal, white, fleshy segments; which unite to the seed round the umbilicus. *Integuments* two; *exterior* spongy, with highly polished, slippery, light brown surface: *interior* membranaceous. *Perisperm (albumen of GÆRTNER,)* pure white, hard, but friable, and occupies the lower half of the seed. *Vitellus* clearer, but less white, and of a harder, and tougher texture than the albumen, occupying the upper half of the seed, and is particularly fragrant. *Embryo* length of the seed, tending to be clavate. *Radicle* truncate, resting immediately over the umbilicus.

SECT. I. *Spikes lateral, appearing before or with the leaves.*

1. **CURCUMA Zedoaria. R.**

Bulbs small, and with the long palmate tubers inwardly yellow.

Leaves broad-lanceolar, subsessile on their sheaths, sericeous underneath; the whole plant green.

Amomum Zedoaria. Linn. sp. pl. ed. Willd. 1. 7.

Judwar, Jedwar, or Zedwar, of the *Arabians.*

Jungli haldi, or Bun-haldi, of the *Bengalese.*

A native of various parts of *India*. Flowers during the hot season, April and May; when the plant is destitute of leaves: soon after they appear. The dry root agrees pretty well with the drug known in *England*, by the name *Zedoaria rotunda*.

CURCUMA ZEDOARIA.

Arab. Jedwar or Zedwar (Geiduar of *Avicenna*.)

Sans. Nirbishá, Apavishá, Vishahá, &c.

Hind. Nirbisi, Nirabisí.

Marhat. & *Carn.* Nirbishi.

Beng. Banhaldi.

Malab. Cuwa.

Malay. Tomon.

As the root is stated to agree pretty well with the round zedoary of the shops, the *Asiatic synonyma* are probably correct. GEORGIUS, in his alphabet of *Tibet* (p. 447), remarks the correspondence of the *Indian Nirbisi* with the *Zedoar* or *Zedoary*; and the author of the *Mekhzenu'ládvíyeh* also furnishes the *Hindi* name, whence the corresponding *Sanskrit* is concluded,) as the equivalent for the *Arabic* appellation of *Zedoary*. The *Sanskrit* term implies, that the drug is used as an antidote to poison. The *Malabar* and *Malay* names are given by VAN RHEEDE and RUMPHIUS for *Zedoary*; and their descriptions are cited by WILLDENOW for this plant, but appear to suit better with the next species of *Curcuma*. If the drug be not the true *Zedoary*, the synonyma must be transferred to some other plant; except perhaps the *Bengalese* appellation, which was furnished by natives from the inspection of this plant. *Note by the President.*

2. CURCUMA Zerumbet. *R. Ind.* pl. 3. No. 201.

Bulbs small, and with the palmate tubers pale straw colour. Leaves green-petioled, broad-lanceolate with a purple cloud down the middle. Flowers shorter than their bracts.

Catchur, Cachura, Cachoramú, &c. of the *Hindús* and *Telingas*.

Sat'hi, or Sotee of the *Bengalese*.

Kua. *Rheed. mal.* 11. *t.* 7.

Zerumbed. *Rumph. amb.* 5. *t.* 68.

Amomum *Zerumbeth*. *Rets. obs.* 3. 55.

A native of various parts of *India*. Flowering time the hot season, before the leaves appear.

The pale colour of the roots; crimson coma, and ferruginous mark down the centre of the leaves, which is a constant mark in this elegant species, readily point it out from every other, which I have yet seen.

The dry root appears to be the *Zedoaria* of the shops in *England*.

CURCUMA ZERUMBET.

Kua.	RHEED.	Tommon.	RUMPH.
Arab.	Zerambád.		
Sans.	Carchúraca, Carchúra, Sat'hi		
Hind.	Cachur, Cachórá.		
Penjáb.	Cachúr, Carachúr.		
Marhát.	and Guzr.	Cachórá.	
Carn.	Cachórá, Cachórabu.		
Telang.	Cachorámu.		
Beng.	Sat'hi.		
Or.	Capurá.		
Malab.	Cuwa.		
Malay.	Tomon.		

The root of this species has been ascertained to be the *Zedoary* of the druggists in *London*. The *Malay* and *Malabar* synonyms are furnished by *RUMPHIUS* and *VAN RHEEDE*, whose figures and descriptions appear to agree with the plant.

There is some confusion in the writings of the *Hindu* physicians, concerning the *Sanscrit* and *Hindi* names which have been cited for the plant and drug. They notice a supposed species of turmeric under the denomination of *Capur haldi*, which the author of the *Bhava pracása* identifies with the *Amra gandhi haridra*, making the *Ambihaldi* to be the same with the *Sat'hi*. But the *Rajanighantu* states this as equivalent to *Carpúraca*, which is the *Carpúra haridra* of some authors, but is called *Cachórá* by others, from the *Sanscrit* *Carchuraca*, for so they read the name.

The *Cachur* or *Cachórá* is, according to *Persian* writers on *Materia Medica*, the *Hindi* name of their *Zerembád*. *GARCIAS*, and after him, *RUMPHIUS*, have in like manner stated *Cachórá* as the name by which *Zerumbet* is known in *Guzrat*, *Canara*, and other parts of the *Dekhin*; and that actually is, in all those provinces, the vernacular name, which corresponds with the *Sanscrit* *Carchúra*. If then this plant be really (as scarcely can be doubted) the species of *Zedoary* called *Zerumbet*, the *Sanscrit* and *Arabic* synonyms are ascertained. *Note by the President.*

3. *CURCUMA cæsia. R.*

Bulbs ovate, and with the palmate tubers inwardly bluish, (cæsius.) Leaves lanceolar, petioled, a deep ferruginous-purple cloud down the middle, which penetrates to the under side ; every other part green. Nílkunth'ha, or Kálá-haldí, of the Bengalese.

Tomon-itam. *Rumph. amb. 5. p. 169.*

A small species, a native of *Bengal*, where it blossoms in May ; soon after the leaves make their appearance. The inward colour of the root, more or less blue, as the vernacular name implies ; and the deep ferruginous purple stripe, down the centre of the leaves, are marks sufficiently strong to know it by. The petioles, and sheaths are green, the scapes lateral ; the fertile bractes ferruginous green ; the coma a deep lively purple ; the exterior border of the corolla is also purple ; and the interior yellow.

Note by Dr. CAREY.

The Hindus bruise the roots and apply them to remove pain or swelling of the joints.

4. *CURCUMA aeruginosa. R.*

Bulbs ovate, and with the numerous incurved palmate tubers inwardly æruginous. Leaves petioled, broad-lanceolar, above the middle a faint purple, evanescent cloud on the upper surface only ; every other part green.

A very stately species ; introduced into this garden from *Pegu*, by Dr. CAREY. Here it blossoms in May, immediately after the leaves appear. It is distinguished from all other *Curcumas*, by the internal æruginous colour of the bulbs, and palmate tubers ; while its numerous, pendulous, oval tubers are inwardly of a pale pearl colour. The comose lateral spike, is in this, as in the other species. The exterior border of the corolla rose-coloured ; the interior deep yellow. The smooth leaves are from 2 to 3 feet long, their petioles, and sheaths about as much, making the whole height from 4 to 6 feet.

5. *CURCUMA ferruginea. R.*

Bulbs and palmate tubers copious, inwardly pale yellow. Sheaths of the scapes, and leaves ferruginous-red, with a faint reddish tinge down the middle of the upper surface of the leaves.

A native of *Bengal*. Flowers in April and May. By attending to the pale yellowish, very fragrant roots, and to the rusty-reddish sheaths of the scapes, and leaves ; and to the faint reddish mark down the middle of the smooth broad-lanceolar leaves themselves, this species may be readily ascertained. When the leaves are old, this mark is often very vague, though very conspicuous while young, particularly in those which appear first in the season. The flowers are few, but large, with the exterior border reddish ; and the inner a deep yellow. The bractes of the fertile part of the spike ferruginous ; of the coma few, and of a pretty bright crimson colour. The whole of this species is about four feet.

6. *CURCUMA rubescens. R.*

Bulbs ovate-lanceolate, and with the palmate tubers inwardly pearl-coloured. Leaves broad-lanceolar, with petioles and ribs deep red. Flowers longer than their bractes.

A native of *Bengal*, at least I have only found it there, and in an old neglected garden, which belonged to a native ; from thence brought into this garden, where it is now abundant, and blossoms in May ; and sometimes from the centre of the leaves, in September. The roots, though inwardly very pale, are powerfully aromatic. The sheaths of the scape, and leaves, as well as the petioles, and rib of the leaves, are a deep red ; the surface of the leaves have also a ferruginous tinge throughout.

7. *CURCUMA comosa. R.*

Bulbs large, oval, inwardly pale ochraceous. Spike clavate ; fertile bractes

pale pink: coma copious and rosy. Leaves petioled, lanceolar, every part green.

For this large, uncommonly elegant species, we are indebted to Mr. FELIX CAREY, who found it in *Pegu*, and sent plants of it from *Rangoon* to this garden; where they blossomed in May last: about the same time of the year the young foliage begins to appear. The root, so far as we have yet seen, consists of very large, oval bulbs, inwardly of a pale ochraceous colour; no palmate tubers, but many of the oblong pendulous kind, which are inwardly white, and penetrate very deep into the earth. The leaves very large; petioles and sheaths included, from five to six feet high; colour of every part thereof uniform green, except in those which appear first in the season; these have a faint ferruginous cloud from the middle up the centre of the surface only. The spikes are uncommonly large and elegant. The flowers numerous, with the exterior border of the corolla pink, and the interior yellow.

8. CURCUMA *leucorrhiza*. R.

Bulbs ovate, palmate tubers long, and spread far, both sorts inwardly pale straw colour. Leaves petioled, broad-lanceolar, smooth, uniform green in every part. Spikes few-flowered, with coma as long as the fertile portion.

Tommon Poeti. *Rumph. amb.* 5. p. 169.

A native of the forests of *Bahar*. From *Bhaglepur* Mr. GLASS, the surgeon of that station, sent roots to this garden, under the name *Tecour*, (*Tikhur*) and observed that it is not cultivated, but grows in the forests to the southward of that place. The process, he says, for obtaining the flour called *Tecour* is as follows:—"The root is dug up, and rubbed on a stone, or beat in a mortar, afterwards rubbed in water with the hand, and strained through a cloth: the fecula subsides, the water is poured off, and the fecula dried."

This plant grows freely in the botanic garden, and flowers in May. Here the palmate, or horizontal tubers, are particularly straight and long: they run far, and very deep in the earth. Their inward colour, as well as the bulbs, very pale ochraceous yellow, almost pure white. Pendulous tubers numerous, oblong, inwardly pearl-white. Leaves broad-lanceolar, uniform green; about 2 feet long; whole height of the plant from 3 to 5 feet. Spikes lateral, the inferior fertile portion not longer than the rosy coma. Flowers length of the bractes; exterior border slightly tinged with pink; inner yellow.

From *Chittagong*, Mr. MC RAE, the surgeon of that station, sent me the living roots of this plant, (or of one so very like as not to be distinguished in their present state,) under the name *Cachur*, and observed that from the roots the powder called *Tikhur* is obtained. See Mr. COLEBROOKE's note on the next species, *C. angustifolia*.

9. CURCUMA *angustifolia*. R.

Bulbs oblong, with pale oblong pendulous tubers only. Leaves petioled, narrow lanceolar. Flowers longer than the bractes.

Tikhur of the Hindus.

Found by HENRY COLEBROOKE, Esq. in forests from the banks of the *Sone*, to *Nagpür*, and by him introduced into the botanic garden at *Calcutta*, where it flowers in May, June, and July. The leaves make their appearance about the same time, and decay about the beginning of the cool season, in November.

It has now been seven years in this garden, and it has not been observed that it ever produces any of the palmate tubers, so common in the other species; but abounds in pendulous tubers, which furnish that fecula, or starch called *Tikhur* or *Ticor*, which is sold in the markets at *Benares*, &c. and is eaten by the

natives. In this garden there is another species, or variety, received from *Travencore*, which has not yet flowered. In that country the natives prepare a very beautiful pure starch from its pendulous tubers, like that of *Maranta arundinacea*, (*Arrow root,*) and *Tacca pinnatifida*, which forms a very considerable part of their diet. It is more than probable that all those pendulous tubers, so common in this genus, abound in a similar fecula.

CURCUMA ANGUSTIFOLIA.

From the tubers of the root of this plant and of *Curcuma Leucorrhiza*, *Tikhur*, a sort of starch or flour like *arrow root*, is prepared by a very simple process. The *Kherwars*, one of the tribes of mountaineers inhabiting the forests of the *Vind'hyā* mountains, use the following method, according to the information which I received when traversing those forests. The roots are ground, and water is added in considerable quantity. The starch or flour settles at the bottom of the vessel; and, the water being then poured off, the starch is dried in the open air. From eight parts by weight of the root, one part of starch or flour is obtained. It is said to be commonly bartered by the *Kherwars* south of the *Sone* for an equal weight of salt.

Having reason to believe, that the same sort of starch or flour is also obtained in the district of *Chatgaon*; I applied to Mr. MACRAE, surgeon at that station, and received very satisfactory information. The powder obtained at *Chatgaon* from the roots, is well known by the name of *Tikhur*; and the plant itself is there called *Phalepa* and *Cachúr*. Judging from the specimens of the leaves and roots, which were received from Mr. MACRAE, I have little doubt that the plant is allied to this species: and probably belongs to the kindred one *C. Leucorrhiza*. The powder, prepared from the root, is considered by the natives at *Chatgaon* as an excellent restorative in cases of consumption; and a preparation of it, in the form of a sweetmeat, is sold in the market.

I shall only add, on the subject of this nutritious powder, that it is very similar to the powder obtained in *America* from the roots of *Maranta Arundinacea*, and which is known in *Europe* by the name of *Indian arrow root*; and there is reason to believe, that other plants of the same natural order afford a similar produce.

In regard to the *Asiatic* names of the plant, and of its produce, I am unable to add any well ascertained synonyma to the received name of *Tikhur*. It is unnoticed under this denomination in the works of *Hindu* and *Muhammedan* writers on the *Materia Medica of India*: and the name of *Cachúr*, by which the plant is distinguished in *Chatgaon*, properly belongs to the *Zerumbet*, (*Curcuma Z.*)

Note by the President.

SECT. 2. *With Spikes central.*

10. *CURCUMA longa.* *Linn.* sp. pl. ed. *Willd.* 1. 14. *Retz.*
obs. 3. 72.

Bulbs small; and with the numerous, long, palmate tubers inwardly deep orange-yellow. Leaves long-petioled, broad-lanceolar, uniform green.

Manjella-kua. *Rheed.* mal. 11. t. 11. bad.

Curcuma. *Rumph.* amb. 5. p. 162. t. 67.

Amomum. *Curcuma.* *Gmelin.* and *Jacq.* *Hort. Vind.* 3. t. 4. Haldi, Halidra, or Haridra of the *Hindus*, and *Bengalese*.

Cultivated very generally over the southern parts of *Asia*; where indigenous I cannot say.

CURCUMA LONGA.

Manjella-Kua, RHEED. Cuning, Cunjet. RUMPH.

Sans. Haridrá, Pítá, Canchaní, Gaurí, &c.

Hind. Haldí, Haladí, Halidrá, Pít-ras.

Beng. Halud, Halidrá, Pít-ras.

Or. Haladí.

Curn. Arisan, Arisin.

Teling. Pasupú.

Guzr. Haradul.

Marhat. Halad, Haladí.

Penjab. Halad, Haradra.

Cashm. Lyadar.

Pers. Zerd-Chóbeh, Zerd-chób (Darzard *Garcias.*)

Arab. Uruku's sufr, Uruku's sabághín (Carcumaa *Avicenna.*)

Malab. Manjella-cuwa RHEED. (Manjella Coua RUMPH.)

Malay. Cunjet. RUMPH. Cunhit, HOWISON. Cunhir H. Cunin R. and H.

The botanical appellation of the genus has been taken from a supposed *Arabic* name of the species, which came into use as a denomination of the drug, upon the authority, as it should seem, of the *Latin* version of *AVICENNA*. The original term, however, which is *Curcum*, signifies not turmeric, but saffron. It is *Persian* according to RICHARDSON; *Arabic* in the dictionary of GOLIUS and MENINSKI; *Hebrew* in PARKHURST's lexicon; but is *Syriac* according to the author of the *Mekhzenu'l adviyeh*. It probably is derived from the same source with the *Sanskrit Cuncuma*, with the *Greek Crocos* and *Crocon*; and with the *Latin Crocus* and *Crocum*; all signifying saffron: an affinity of names which had been already remarked by RUMPHIUS.

The colour of the root, and its similarity to saffron, have indeed suggested appellations for the turmeric in more than one language.

Thus it has been named *Crocus Indicus*, and by the Portuguese *Saffrân de terra*. The Persian, Arabic and Malay names of it are all relative to its yellow dye or golden colour, and so in general are the Sanscrit synonyms. The familiar term, *Haridrá*, whence the vernacular names of it in most countries of *India* are taken, is explained by etymologists as also bearing allusion to the colour, 'brighter than a tawny hue (*hari.*)' *Note by the President.*

11. CURCUMA *Amada*. R.

Bulbs conic, and with the palmate tubers inwardly pale yellow. Spike scanty, few-flowered. Leaves long-petioled, broad-lanceolar. The whole plant uniform green.

Tommon manga. *Rumph. amb.* 5. p. 169.

AMADA of the *Bengalese*, which signifies *Mango-ginger*; the fresh root possessing the peculiar smell of a green mango, which alone will distinguish this species from every other I have yet met with. Dr. CAREY observes, that it is also known by the name *Kajula-gauree*, and used by the natives to excite appetite, when lost by long weakness.

A native of *Bengal*. Flowering time the rainy season. The natives eat the root in their curries, and use it medicinally.

12. CURCUMA *viridiflora*. R.

Bulbs oblong, and with the palmate tubers inwardly deep yellow. Leaves long-petioled, oblong. The whole plant, (spike and coma,) uniform green.

Tommon giring. *Rumph. amb.* 5. p. 169.

A native of *Sumatra*. From thence Dr. CHARLES CAMPBELL sent the plants to this garden, under the *Malay* name *Tommon*, the root of which, he observed, yield the *Malays* a yellow die; though the colour is paler than that of *C. longa*. The odour is also very different; the plant much larger and entirely green, even the coma of the spike, which in all the rest is the most highly coloured part.

13. *CURCUMA montana*. *Corom. pl. 2.* No. 151.

Bulbs conic, with pale yellow palmate tubers. Leaves short-petioled, oblong. The whole plant uniform green, except the rosy coma of the spike.

A native of the vallies amongst the *Circar* mountains, and blossoms during the rains. The exterior border of the corolla very pale pink; the point of its upper segment broad, and rather obtuse; in most of the other species it is acute.

14. *CURCUMA reclinata*. *R.*

Bulbs fusiform, with scarce any palmate tubers, but many straw coloured, oval, pendulous. Leaves petioled, oblong, reclinate.

A native of *Hindostan*. Blossoms during the rains. Is the smallest of the genus which I have yet seen. The spike purple throughout; the flowers of the same colour, except a small tinge of yellow on the centre of the lip; and the sheaths of the leaves tinged with red.

Besides the foregoing fourteen species, there are in the garden several more, or varieties, which have been lately introduced, and have not yet flowered. One of them with an æruginous root, found by Colonel HARDWICKE in the *Duab*. One or two from *Malabar*, said to be sorts of *Arrow root*, and two or three introduced by Dr. CAREY from *Pegu*; making in all about twenty species in this garden.

6. *AMOMUM*.

GEN. CHAR. *Corolla* with interior border unilabiate. *Anther* double, surmounted with an entire, or lobate crest. *Capsule* 3-celled, 3-valved. *Seeds* many, arilled.

As this genus now stands, it is a good, and natural one. The plants belonging to it, of my acquaintance I always mean, are but few. They have creeping, jointed, perennial, tuberous roots, with numerous

strong fibres therefrom, which dip deep into the soil. Their *stems* are at least biennial, invested in the sheaths of the bifarious *leaves*. The *inflorescence* uniformly radical *spikes*, rather loosely imbricated; with one-flowered bractes; and either a hornlet, or glandular enlargement, between the base of the filament, and insertion of the lip, as in most of the *Alpinias*. The capsules are 3-celled, 3-valved, and contain many seeds, enveloped, while recent, in a soft gelatinous aril, which vanishes, or is scarce discernible when dry. The embryo subclavate, and furnished with both a perisperm, and vitellus.

1. *AMOMUM Cardamomum*. *Linn. sp. pl. ed. Willd.* 1. 8.

Leaves short-petioled, lanceolar. Spikes even with the earth, lax. Bractes lanceolate, acute. Lip with anterior margin 3-lobed. Crest 3-lobed.

Cardamomum minus. *Rumph. amb. 5. t. 65. f. 1.*

A native of the *Malay Islands*; from *Sumatra* Dr. CHARLES CAMPBELL sent plants to this garden, where they blossom during the month of May, just before the rains begin. To the taste the seeds are agreeably aromatic, and are used by the *Malays* as a substitute for the real *Cardamom* of *Malabar*.

2. *AMOMUM angustifolium*. *Linn. sp. pl. ed. Willd.* 1. 8.

Leaves broad-lanceolate. Spikes elevated, linear-oblong. Bractes oblong, rather pointed. Lip obovate-cuneate, entire. Crest three-toothed.

Amomum angustifolium. *Sonnerat's Voyage*. 2. 242. t. 137.

A native of *Madagascar*. From the *Mauritius* Captain TENNENT brought it to this garden, where it blossoms during the cool season. The flowers possess a considerable share of spicy fragrance, and are showy; the exterior border of the corolla and superior bractes being red, and the large lip yellow.

3. *AMOMUM aculeatum. R.*

Leaves subsessile, cordate-lanceolate. Spikes obovate, even with the earth. Bractes lanceolate. Crest amply 3-lobed. Capsules oval, echinate.

A native of the *Malay Archipelago*; from thence introduced into the botanic garden, where it blossoms freely in April and May; seed ripens in October. The capsule is perfectly destitute of grooves: for this and other reasons, I think it cannot be KŒNIG's *Amomum, an Globba crispa*; nor RUMPHIUS's *Globba crispa viridis*, because the cortex of the capsule is of a soft fleshy texture; hence likewise I conclude it cannot be *A. echinatum. Linn. sp. pl. ed. Willd. 1. 8.*

As in the *Alpinias*, there are two hornlets, one on each side, between the insertions of the lip, and filament on the mouth of the tube.

4. *AMOMUM maximum. R.*

Leaves petioled, lanceolar, villous underneath. Spikes oval, even with the earth. Bractes lanceolate. Crest of one semilunar lobe. Capsules round, nine-winged.

A native of the *Malay Archipelago*. In the botanic garden at *Calcutta*, where it has long been, it blossoms in April and May; and the seeds are ripe in September and October.

The flowers are nearly white, with a small tinge of yellow on the middle of the lip. The seeds have a warm, pungent, aromatic taste, not unlike the real *cardamom*, but by no means so grateful. RUMPHIUS's representation of the fruit of his *Globba crispa rubra, Vol. 6. t. 60. D.* might serve for this; but, as the seed vessel of my plant is perfectly destitute of hairs, I cannot believe it is LOUREIRO's *A. villosum*. See WILLDENOW's *edition of the species, 1. p. 8. &c.*



Amomum vanderkamii.
Tab. 4

7. ZINGIBER.

GEN. CHAR. *Corolla* with interior border unilabiate. *Anther* double, crowned with a single (horn-shaped,) curved beak. *Capsule* 3-celled, 3-valved. *Seeds* many, arilled.

The plants, which fall under the above *essential character*, further differ from the *Amomums* in being herbaceous: (whereas in that genus they are all, at least biennial.) Their inflorescence uniformly radical, or terminal spikes: compactly* or openly† imbricated with one-flowered bractes. To render the specific characters of the different species more concise, I have arranged those with radical spikes in one section, and those with terminal in a second.

SECT. I. *Spikes radical.*

1. **ZINGIBER officinale.** *Roscoe in Trans. of Linn. Soc.* 8. 348.

Leaves linear-lanceolate. Spikes compact, strobili-form, elevated. Bractes acute. Lip 3-lobed.

Common Ginger.

Amomum Zingiber. *Linn. sp. pl. ed. Willd.* 1. 6.

Inschi. Rheed. mal. 11. t. 12.

Zingiber majus. *Rumph. amb.* 5. t. 66. f. 1.

Ada, or Adrac of the *Hindus*, and *Bengalese*.

A plant too well known, to need any further description.

ZINGIBER OFFICINALE.

Inschi. RHEED. Alea. RUMPH.

Sans. Ardraca, Ardra, Sringavéra.

Hind. Adrac, Adarac, Adá, Ad.

Beng. and Or. Adá.

Tirh. Ad.

Guzr. Adu.

Cashm. Aduru.

* As in *officinale*, *Zerumbet*, *Cassumunar*, and the two with terminal spikes.

† As in *squarrosum*, *roseum*, *rubens*, and *ligulatum*.

Penjab. Adarac. Adra. Adí.

Marhat. Alé.

Carn. Allá.

Telang. Allam.

Arab. Zenjabíl.

Malab. Alé, Inchi. RHEED. Imji. RUMPH.

Malay. Halya, Alea. RUMPH. Alia. HOWISON.

Among the *Sanskrit* synonyms of ginger, *Sṛṅgavéra* (signifying horn-shaped,) or, as it is pronounced in some places, *Sṛṅgabéra*, has a marked affinity with the Greek *Ζυγίζερις*, the *Latin* *Zingiber*, and even the *Arabic* *Zenjabíl*; as well as with all the names which the drug obtains in the various languages of *Europe*. This affinity of the *Arabic* and *European* names had been long ago remarked by GARCIAS. Its origin is now traced to the ancient and learned language of *India*.

The plant and fresh root are in *Hindi* called *Adrac* and *Adá* from the *Sanskrit* *Ardraca* and *Ardra*; and the dry root is named by most *Indian* nations *Sónt'h* or *Sunt'h* from the *Sanskrit* *Sunt'hi* or *Sunt'hi*. The etymology of these terms seems to indicate the contrast of wet and dry; for such is the radical sense of the words *Ardra* and *Sunt'h*: but *Sanskrit* grammarians explain the first as alluding to the moisture which ginger induces on the tongue; and the other as indicating the virtue which it is supposed to possess of drying up phlegm. *Note by the President.*

2. ZINGIBER *Zerumbet*. Roscoe in *Trans. of Linn. Soc.* 8. 348.

Stems declinate. Leaves approximate, sessile, lanceolar. Spikes compact, strobiliform, much elevated, oval, obtuse. Bractes broad-ovate, obtuse; margins coloured. Lip 3-lobed.

Amomum Zerumbet. *Linn.* sp. pl. ed. *Willd.* 1. 6.

Katu-inschi-kua. *Rheed.* *mal.* 11. t. 13.

Zingiber spurium. *Retz. obs.* 3. 60.

Lampujum. *Rumph. amb.* 5. t. 64. f. 1.

A native of various parts of *India*. Flowering time the rainy season. Seeds ripen in November and December, by which time the plant has perished down to the root.

ZINGIBER ZERUMBET.

Katu-inschi-kua. *RHEED.* *Lampujang*. *RUMPH.*

This plant was supposed by RUMPHIUS to be the *Zerumbet*; and the *Brahmens*, who assisted VAN RHEEDE, appear to have mistaken



it for the *Galangal*, for they named it to him *Cólanjana*, as may be gathered from his text corrected by the *Nagari* characters in the plate. It is neither of those celebrated drugs; but bears more resemblance to the *Cassumunar*, which is however the root of the next species. *Note by the President.*

3. **ZINGIBER Cassumunar. R.**

Stems erect. Leaves sessile, linear-lanceolate. Spikes compact, strobiliform, elevated, lanceolate, acute. Bractes obovate, pointed. Lip 3-lobed.

Bun-ádá of the *Hindus* and *Bengalese*.

Car-puspoo of the *Telingas*.

A native of various parts of *India*. Flowering time the rainy season. Seed ripe in November.

The root of this plant Sir JOSEPH BANKS and Dr. COMBE think the true *Cassumunar* of the shops. When fresh it possesses a strong camphoraceous odour, and warm, spicy, bitterish taste; when dried considerably weaker.

ZINGIBER CASSUMUNAR.

From the *Bengali* name, as ascertained by Dr. ROXBURGH, and which is composed of words of *Sanscrit* origin, a *Sanscrit* name might be inferred, *Vanádrduca* signifying wild ginger; but I find no authority for it. This plant was brought to me for the *Dar-haldi*, which is the *Dárvicá* of *Sancrit* authors, and noticed as an efficacious drug in the writings of the *Hindu* physicians.

I am at a loss to conjecture the origin of the name by which the drug is known in *England*. It was first introduced into practice by MARLOE, as a medicine of uncommon efficacy in hysterick, epileptic and paralytic disorders; but is gone out of repute. *Note by the President.*

4. **ZINGIBER roseum. Roscoe in Trans. of Linn. soc. 8. 348.**

Leaves short-petioled, lanceolate. Spikes lax, half immersed in the earth. Bractes lanceolate, coloured. Lip entire.

Amomum roseum. Corom. pl. 2. No. 126.

Buma catchicay of the *Telingas*.

A native of the vallies amongst the mountains of the northern *Circars*, where it blossoms during the rains.

5. *ZINGIBER ligulatum. R.*

Leaves approximate, sessile, lanceolate. Spikes lax, obovate, apex even with the earth. Bractes cuneiform. Lip sub-hastate.

A native of *Hindostan*, where it was first noticed by Colonel HARDWICKE. Flowers during the rainy season; seed ripe in December.

6. *ZINGIBER rubens. R.*

Leaves lancolar. Spikes lax, half immersed in the earth. Bractes linear-lanceolate, straight. Lip narrow-ovate, entire.

Sent by Dr. F. BUCHANAN, from the district of *Rungpür* to this garden, where it grows freely, and blossoms in August.

7. *ZINGIBER squarrosum. R.*

Leaves lanceolar. Spikes squarrose, half immersed in the earth. Bractes linear, with long, taper, waved, recurved apexes. Lip 3-lobed; apex bifid.

A native of *Pegu*, where it ripens its seed in December. From *Rangoon* Mr. FELIX CAREY sent the fresh roots, entire capsules, and ripe seeds to this garden, where the plants from both the seeds and roots grow freely, and the latter blossomed in August.

SECT. 2. *Spike terminal.*8. *ZINGIBER capitatum. R.*

Leaves linear-lanceolate, stem-clasping. Exterior bractes lanceolate; interior ovate.

A native of *Hindostan*, where it was also first noticed by Colonel HARDWICKE; and, (with the last,) sent to the botanic garden at *Calcutta*, under the *Hindu* name *Jengli-adrac*. It blossoms in the early part of the rains; and the seed ripens abundantly in September and October.

9. *ZINGIBER marginatum. R.*

Leaves sessile, lanceolate. Exterior bracte obovate, with broad, transparent, membranaceous margin.

Native place uncertain.

8. COSTUS.

GEN. CHAR. *Corol* with interior border of one campanulate back-cleft lobe. *Filament* lanceolate, with the double anther attached far below its apex. *Capsule* 3-celled, 3-valved. *Seeds* numerous, naked.

1. *Costus speciosus. Smith in Trans. of Linn. Soc. 1. 249.*

Leaves sessile, spirally arranged, oblong, villous underneath.

Banksia speciosa. Retz. obs. 3. 75.

Tsjana-kua. Rheed. mal. 11. t. 8.

Céyu of the *Hindus* and *Bengalese*.

Cashmira, Pushcara, Sanscrit names.

A native of all the southern parts of *Asia*. In *Bengal* it blossoms during the rains, and the seed ripens in October and November. No use, so far as I can learn, is made of any part of the plant by the natives of *India*, and Sir JOSEPH BANKS informs me, that the root does not at all resemble the *Costus Arabicus* of the shops.

The tuberous part of the *root* runs horizontal a few inches under the surface of the earth; is often two inches in diameter, marked with annular rings; from every part, the proper fibrous roots issue, and penetrate deep into the soil; colour of the old parts pale yellow; of the young, white; texture, firm, tough, and fibrous; and has not any of that spicy, or camphoraceous odour, so common to the plants of this order. *Stems* erect, or nearly so; some straight, while others from the same root rise with a spiral contortion; lower half invested in simple, downy sheaths; general thickness about that of a walking cane, and from 4 to 6 feet high. *Leaves* spirally

arranged round the upper half of the stems, subsessile, oblong, cuspidate, very downy underneath; length from 6 to 15 inches. *Spike* a single, oblong, firm one, crowns the top of each stem, imbricated with numerous, exterior, ovate, concave, hard, polished, pointed, one-flowered, permanent bractes, or scales; colour green, ferruginous, or red, but all become bright red by the time the seeds are ripe; besides these, each flower has a smaller interior, boat-shaped bracte, embracing the *left* side of the 3-cleft *calyx*, which also becomes red by age. *Corol* large, pure white, with a faint blush of pink; inodorous; the inner border resembles the limb of the flower of *Convolvulus sepium*, but bent out in a recurved direction, and with the margin elegantly laciniate-dentate. *Filament* lanceolate, incumbent over the middle of the inner border, back clothed with much, long, soft, white hair: nearly to its centre, on the underside, is attached the oblong *double anther*. *Style* shorter than the filament. *Stigma* large, bilabiate, and even with the apex of the anther. *Capsule* 3-sided, smooth, hard, deep red, crowned with the still perfect, permanent, rigid, coloured calyx, 3-celled, 3-valved, opening on the sides. *Seeds* numerous, angular, black, smooth. *Perisperm* conform to the seed, pure white, and cartilaginous. *Vitellus* thin and closely embracing, like a case, all but the base of the *embryo*, which is central, cylindric, and as long as the perisperm, with its truncate *radicle* close to the umbilicus.

9. ALPINIA.

GEN. CHAR. *Corol* with interior border unilabiate. *Anther* double, naked, (uncrowned.) *Capsule* berried, 3-celled. *Seeds* a few, or numerous, arilled.

The plants which come under this definition, form a good natural genus; for besides the common character of the family, the other affinities of the individuals which compose it, are peculiarly striking, viz.

In having strong, thick, crooked, permanent *tubers*, which run nearly horizontal, a little below the surface of the earth, are strongly marked with the annular scars of the decayed sheaths; and from every part the long, thick, fibrous, fibres issue, which form the real root.

The *stems* are from biennial, to perennial, numerous, growing in tufts, straight, and erect, or more or less recurved, according to their place in the tuft; clothed with bifarious, lanceolate, acute *leaves*; and all, except *Cardamomum*, terminate in a copious raceme, or panicle of large, gaudy flowers. The *calyx*, as in the other genera of this order, is superior, and consists of one leaf, having its margin very irregularly divided. This part furnishes little or no help in discriminating the species. The *corol* is of one petal, with a double border, the exterior three-parted; inner of one, large, more highly coloured *lobe*, or *lip*, or *nectary*, placed on the under side, opposite to the staminæ; on each side of its base, or insertion, a curved hornlet is to be found in the greatest number of the species. The *filament* is broad, slightly grooved on the inside, supporting a large, *double*, emarginate, *crestless anther*, with a deep fissure between its lobes, for the reception of the *style*. The *germ* inferior, 3-celled, with many seeds in each, (except in *Galanga*, where the number is constantly two in each cell,) attached to a thickened portion of the partitions, a little removed from the axis. *Style* slender, and of a length sufficient to raise the infundibuliform, ciliate *stigma*, even with, or a little above the apex of the anther. *Nectarial scales*, in this genus generally united into one, thick, short, crenulate, truncate body, which embraces the base of the style on the exterior side. The *capsule* is one of those that may be called *berried*, invariably 3-celled. The *seeds* more or less numerous, invested in a multifid

aril, and two integuments. In those I have had it in my power to examine, there is a *perisperm*, or *albumen*; and *vitellus*. The *embryo* is generally an inverted crescent, more or less perfect, with a straight portion, the radicle, from the middle of its convex, or underside, pointing to the umbilicus of the seed.

1. **ALPINIA Galanga.** *Linn. sp. pl. ed. Willd.* 1. 12.

Leaves sessile, broad-lanceolar. Panicle terminal. Lip oblong, with bifid apex, linear claw, and two conic coloured glands at its base. Germ with two-seeded cells. Capsules obovate, smooth, few-seeded.

Galanga major. *Rumph. amb.* 5. *t.* 63.

Alpinia Galanga. *Roscoe in Trans. of Linn. Soc.* 8. 345.

A native of the *Malay Archipelago*. From *Sumatra* Dr. CHARLES CAMPBELL sent plants to this garden in 1800: where they flower during the hot season; and ripen their seed, though very rarely, in November. The seed vessel is small, obovate, smooth, deep orange red, does not open spontaneously, and cannot contain more than two seeds in each cell, (that being the number in the germ,) which are three-fourths covered with a white aril. To the taste they are bitter, and nauseous. These circumstances induce me to believe it to be RUMPHIUS's plant, but I doubt whether any one of KŒNIG's *Languas*'s can be referred to this. For the same reason I would exclude LOUREIRO's *A. Galanga*.

By the assistance of Sir JOSEPH BANKS, and Dr. COMBE, it has been found, that the root of this plant is the real *Galanga major* of our shops (in *London.*)

ALPINIA GALANGA.

Lanquas. RUMPH.

Arab. Khólinján, Khulinjan.

Sans. Culanjana, Culanja, Sugandhá-vachá, Mahábhári-vachá.

Hind. Culinjan, Culénjin, Culájan.

Carn. and *Marhat.* Culanjan.

Malay. Lanquas. RUMPH. Lancooa. HOWISON.

The root of this plant being ascertained to be the *Galanga major* of the druggists, conformably with what had been said of it by RUMPHIUS, there is no doubt of its being the *Khólinján* of the Arabs, termed in *Hindi Culinjan*. In *Sanscrit* it is called *Culanjana* according to one authority (the *Rájnighantu*;) but *Sugand'há vachá*, or sweet scented *Acorus*, as also *Mahabbari vachá* according to another *Indian* treatise (the *Bhavapracásá*.) If the first name be genuine *Sanscrit*, which is however doubtful, the similar names in other languages, including the *European* term *galanga*, must be derived directly or meditately from it. *Note by the President.*

2. **ALPINIA Allughas.** Roscoe in *Trans. of Linn. Soc.* 8. 346.

Leaves lanceolar, polished. Panicle terminal. Lip bifid; lobes retuse. Capsules spherical, polished, (black,) one-valved, many-seeded.

Hellenia Allughas. Linn. sp. pl. ed. Willd. 1. 4.

Mala-inschi-kua. Rheed. mal. 11. t. 14.

Táraca. *Asiatic Researches.* 4. 240.

Tara, or Tarac of the *Bengalese*.

A native of *Bengal*, and very common. Flowering time the whole of the rainy season. Seed ripe in October and November.

ALINIA ALLUGHAS.

According to VAN RHEEDE, this plant is called by the *Bráhmanas*, *Giri Kolinjana* or mountain ginger. This name is obviously taken from the *Sanscrit* *Giri* a mountain, and *Culanjana* the Galangal, to which indeed the plant is much nearer than to the ginger.

It has been described by Sir W. JONES, under the *Sanscrit* name of *Táraca*, the authority for which I have been unable to discover. The word is indeed *Sanscrit*; and, among other senses, is stated in dictionaries to be the name of a tree: a description which is not reconcileable with this plant. *Note by the President.*

3. **ALPINIA malaccensis.** Roscoe in *Trans. of Linn. Soc.* 8. 345.

Leaves lanceolar, petioled, villous underneath. Racemes terminal, simple. Lip broader than long, obscurely three-lobed, (lateral lobes incurved into a tube.)

Maranta malaccensis. Linn. sp. pl. ed. Willd. 1. 14.

Galanga malaccensis. Rumph. amb. 5. t. 71. f. 1.

A native of *Chittagong*; from thence introduced into the botanic garden at *Calcutta*, where it flowers in April and May.

This is the most stately, and most beautiful of our scitamineous plants. The flowers are particularly large, with the bractes, and exterior border of the corolla, pure, smooth, lucid white; and the large lip variegated with crimson and yellow.

4. *ALPINIA nutans*. *Roscoe in Trans. of Linn. Soc.* 8. 346.

Leaves lanceolar, short-petioled, polished. Racemes terminal, drooping. Lip obscurely three-lobed, (lateral lobes incurved into a tube.) Capsules spherical, opening down the sides. Seeds a few, round; aril white; (nectaries square and truncate.)

Renealmia nutans. *Andr. Bot. repos.* 5. t. 360.

Globba nutans. *Linn. sp. pl. ed. Willd.* 1. 153.

Poora-nag-champa of the *Hindus*.

A native of the interior parts of *Bengal*. From *Dinajpúr* Dr. W. M. CAREY sent plants to this garden, where they are perfectly at home, producing quickly from the same root, numerous, luxuriant stems, of from 5 to 8 feet in length, and as thick as a man's finger; flower abundantly during the hot season, (March, April and May,) and the seed ripens in October and November. The seeds possess a small degree of spicy warmth. The root is also odorous, and is sometimes carried to *England* for *Galanga major*. In this the apex of the anther is bifid. Stigma large, with hairy callous lips.

5. *ALPINIA mutica*. *R.*

Leaves short-petioled, narrow-lanceolar, polished. Racemes terminal, erect, compound. Lip 3-lobed; base spurless. Capsule berried. Seeds numerous, angular; aril evanescent.

Found by Mr. W. ROXBURGH in the forests of *Prince of Wales' Island*, from thence introduced into

this garden, where it flowers more or less the whole year, but chiefly during the hot season. It is also an elegant species, and holds a middle rank between *nutans* and *calcarata*.

6. *ALPINIA calcarata*. Roscoe in *Trans. of Linn. soc.* 8. 347.

Leaves narrow-lanceolar, polished. Spikes terminal, erect, compound. Lip ovate-oblong, with curled bilobate apex.

Renealmia calcarata. Andr. *Bot. Repos.* 6. t. 421.

From *China* it was introduced into this garden in 1799, where the same root quickly produced innumerable stems, of about the thickness of a common ratan, and about 3 or 4 feet long; and in flower more or less the whole year, but chiefly in March and April.

7. *ALPINIA Cardamomum. R.*

Scapes from the base of the stems, ramous, procumbent. Lip 3-lobed, with calcarate base.

Amomum Cardamomum. R. *Ind. pl. 3. N.* 226.

Amomum repens. Linn. sp. pl. ed. Willd. 1. 9. *Sonnerat, &c.*

Elettari. Rheed. mal. 11. t. 4. and 5.

Cardamomum minus. Pharm. Lond. and Edinb.

Ela, one of its numerous *Sanscrit* names.

Elachi, or *Elaichí* of the *Hindus* and *Bengalese*.

Ailum-chedy of the *Malabars* on that Coast.

A native of the mountainous parts of *Malabar*, where it is found both wild and cultivated. In the latter state it begins to blossom during the first rains, when about 4 years old; and the ripe fruit is gathered in November. It continues to be productive till about the seventh year, when it is usual to cut it down, and from the roots other stems rise, which are treated as before.

ALPINIA CARDAMOMUM.

Elettari. RHEED.

Sans. *Elá, Sucshmá-élá, Dravídí, Truti, Córangí, Upacunchí, &c.*

Hind. *Eláchí, lláchí, Elaichi, Ch'hotí láchi, Gujrati élachi.*

Beng. and Or. Elaich.

Cashm. Lóchiél.

Malab. Ela. Elettari. RHEED. Alum chedi. ROXB.

Marhat. Elá, Gujrátt'bi iláchí.

Carr. Eraré, Erací, Chiri yálacci.

Télang. Sanna yálacci.

Arab. Kákulah, Hál.

Pers. Hil.

Two sorts of Cardamoms, denominated in various languages large and small, are distinguished by the *Hindi* names of *Púrbi* and *Guzráti Eláchi*, or Cardamoms produced in the east of *Hindostan* and in *Guzrat*. The *Sanskrit* synonyma make the small sort to be the production of *Drávida* or the southern part of the peninsula of *India*. It is the seed of this plant, which is a native of the mountains near *Cochin* and *Calicut*. The large sort, according to the *Sanskrit* synonyma, is a production of *Triputi*. Note by the President.

8. ALPINIA *spicata*. R.

Spike terminal, oblong, compactly imbricated with narrow-lanceolate, acute bractes.

A native of *Sumatra*, and the smallest of the genus I have yet seen. It was brought by Mr. W. ROXBURGH from *Bencoolen* to this garden in 1803; and at the close of the rains of 1808 it blossomed for the first time, and was then only about two feet high.

10. GLOBBA.

GEN. CHAR. Corolla with interior border two-lobed, or none.

Filament very long, curved; base tubular, and winged with a cuneiform lip. Anther double (appendicled, or naked.)

Capsule one-celled, 3-valved. Seeds many, attached to 3 parietal receptacles.

As ROSCOE observes, in his new arrangement of the Scitaminean plants, no genus in the whole order is more strongly marked than *Globba*; though certainly the LINNÆAN description could never have led to a discovery of the plants of it. It is to DR. SMITH, who found the original specimen of *Globba marantina* in the LINNÆAN HERBARIUM, that we are obliged for detecting and correcting this error in his descrip-

tion of the plant, in his *Exotic Botany*. The same plant, I had, till this discovery was made known, considered to belong to an undescribed genus, which I called *Colebrookia*, in honour of our President, whose knowledge of botany, and the benefit the science has derived from his help, justly entitle him to this distinction; which by all true botanists is considered the highest reward, and more lasting than even a monument of marble or brass. And I also take this opportunity of thanking Dr. SMITH for having (in consequence of his discovering that my *Colebrookia bulbifera* was *Globba marantina* of LINNÆUS,) transferred that name to another new genus of *East Indian* plants.

The individuals of this family are all *herbaceous*; of rather small size, (their stems and inflorescence together rarely exceed three feet in height;) and perish down to the root about the month of November. Their *leaves* lanceolar, (tapering equally at each end;) or lanceolate, (tapering from or near the base;) nearly smooth, and tapering into longer and finer points than any other of the order. In all the species here noted, the *inflorescence* is terminal, except in the last. The prevailing colour of the flowers yellow; and the *lip*, or *wing* of the filament (as in the whole of the order,) the brightest, and most ornamental part. The *filament* is particularly long, very slender, and much incurved. *Anther* double, variously appendaged, or naked. The *style* uncommonly slender; sometimes it passes along a groove on the inside of the filament to the anther; sometimes it takes a straight, and more direct course, but always passes between its lobes. The *stigma* funnel-shaped. The *capsule* oval, generally fleshy and tubercled, 1-celled, 3-valved, opening from the apex. *Seeds* many, attached to three parietal receptacles, by the intervention of a thick, spongy, umbilical cord, resembling a small aril.

1. *GLOBBA marantina*. *Linn. sp. pl. ed. Willd.* 1. 153.

Leaves lanceolar. Spikes terminal, subsessile, strobiliform, bulbiferous. Anthers four-horned.

G. marantina. *Smith's Exot. Bot.* 2. t. 103. and *Roscoe in Trans. of Linn. Soc.* 8. 356.

Lampujum silvestre minus. *Rumph. amb.* 5. t. f.

A native of the *Malay Islands*: from *Amboyna* it was originally introduced into this garden, where it thrives luxuriantly, and flowers during the rains, but never produces seed here; though the germ is perfect, with many seeds attached to its three parietal receptacles. A small ovate bulb is produced in the bosom of each bracte, and by these the plant is more readily propagated, than it could be by seed.

2. *GLOBBA bulbifera*. *R.*

Stems bulbiferous. Leaves oblong. Racemes terminal, erect, shorter than the leaves, bulbiferous.

Conda-puspoo of the *Telingas*.

A native of the vallies among the *Northern Cincar* mountains. Flowers during the rains.

The original description of this species has been lost, and I have only my recollection, and an imperfect drawing, to go by in making out the specific character.

3. *GLOBBA orixensis*. *R.*

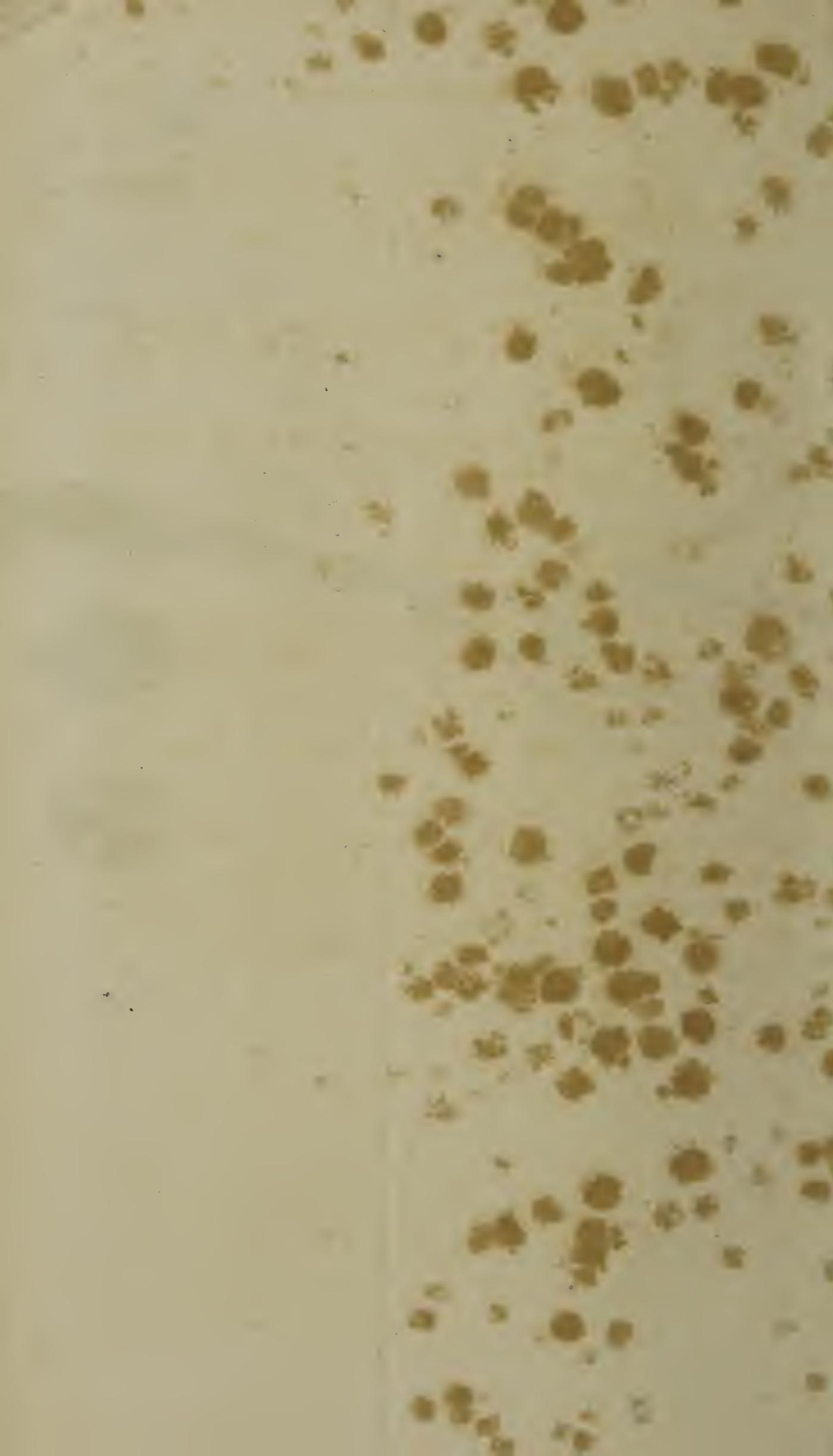
Leaves oblong. Panicle terminal. Anthers naked. Capsule verrucose.

A native of the moist vallies amongst the *Cincar* mountains, where it blossoms during the rainy season. Dr. BUCHANAN has also found it in the *Rung-pur* district, and sent plants to this garden, where they blossom throughout the rainy season.



Tab. 6

Gholthia orientalis.



4. **GLOBBA Hura. R.**

Leaves ovate-oblong. Raceme terminal, erect; pedicels tern, three-flowered. Anthers with a membranaceous coronet.

Hura siamensis. Koenig. in Retz. obs. 3. p. 49.

5. **GLOBBA pendula. R.**

Leaves lanceolate. Racemes terminal, compound, greatly longer than the leaves, pendulous. Anthers bicalcarate.

Found by Mr. W. ROXBURGH, wild in the forests of *Prince of Wales' Island*.

6. **GLOBBA radicalis. R.**

Panicle radical. Anthers winged.

Found by Mr. W. ROXBURGH indigenous in the forests of *Chittagong*, and from thence introduced into the botanic garden at *Calcutta*, where it flowers from April, to the end of June. About the same time the herbaceous stems and leaves appear. There is a constant succession of the flowers from the extremities of the lengthening branches of the panicle, for nearly two months. The whole panicle, peduncles, both common and partial, bractes, and flowers, (except the deep, but bright yellow lip or lower wing of the filament,) are of a lively blue-purple colour, and uncommonly beautiful.

EXPLANATION OF THE FIGURES.

TAB. I. *PHRYNIUM capitatum.*

FIG. 1. The entire flower, with the upper part of the tube which supports the inner border, laid open. *a, a,* The calyx. *b, b, b,* The segments of the exterior border of the corolla. *c, c,* The two large segments of the inner border, and *d,* the three inner. *e,* The anther. *f,* The stigma.

2. The germ and sections. All the above magnified.

3. The ripe capsule, natural size.

4. Two thirds of the same with an entire seed in one cell, and a section in the other; natural size.

5. A vertical section of a seed, magnified: *a,* the perisperm: *b,* the embryo.

TAB. 2. *KÆMPFERIA pandurata.*

FIG. 1. The corolla, natural size. *a,* The tube. *b, b, b,* The three segments of the exterior border. *c, c,* The two superior segments of the interior border, removed to some little distance. *d,* The lower segment or lip, also removed. *e,* The anther and crest.

2. The germ and transverse section, *a.* *b,* The calyx laid open, which exposes to view the two awl-shaped bodies, which embrace the base of the style, *e.* *d,* The stigma, natural size, and magnified.

3. 3. The two bractes.

TAB. 3. *CURCUMA angustifolia.*

FIG. 1. The calyx laid open, exposing to view the two *Kænigean* awl-shaped scales, embracing the base of the style.

2. The germ and section.

3. The interior bracte.

4. The stigma.
5. The corolla laid open. *a, a, a*, The three segments of the exterior border. *b, b*, The superior segments of the inner border. *c*, The lip, or lower segment. *d*, The calcarate anther, on its short filament.
6. The capsule and section.
7. One of the seeds with its aril expanded.
The above figures are but a little magnified.
8. Sections of a seed magnified. *a*, The perisperm. *b*, The vitellus. *c*, The embryo.

TAB. 4. *AMOMUM aculeatum.*

- FIG. 1. The interior bracte, which is here tubular.
2. The germ, and transverse section.
3. The calyx, laid open.
4. The corolla laid open. *a, a, a*, The three segments of the exterior border. *b*, The lip. *c, c*, Two conical glands between the base of the filament *d*, and lip *b*.
5. The double anther, and three-lobed crest, with the infundibuliform stigma in the centre.
6. Capsule cut transversely, with the upper portion separate.
7. A seed, without its gelatinous aril.
8. A vertical section of the same, magnified.
9. The vitellus, and embryo, removed from their place in the centre of the perisperm, still more magnified.

TAB. 5. *ZINGIBER Cassumunar.*

- FIG. 1. A back view of a flower, with its exterior, and interior bractes.
2. The germ and section.
3. The interior bracte.
4. The calyx, laid open.
5. The corolla, laid open.
6. The anther, and horn-shaped beak, or crest.
7. The open capsule, natural size.
8. One of the seed, and aril, laid open.
9. A vertical section of a seed, magnified. *a*, The perisperm. *b*, The vitellus. *c*, The embryo.
10. Section of a seed, after vegetation is a little advanced.

TAB. 6. *GLOBBA orixensis.*

FIG. 1. The corolla removed from the germ. *a, a, a*, The three segments of the exterior border. *b, b*, The two interior. *c*, The lip, or wing of the long slender curved filament *d*. *e*, The naked anther, and stigma. *f*, The part of the style proceeding to the anther, in a more direct course, than the groove of the filament.

2. The germ and section.

3. The calyx, laid open.

4. The capsule and section, natural size.

5. One of the seed, natural size.

6. Section of the same, magnified, with the partial aril thrown back. The internal structure has not yet been ascertained.

In all, the principal figures are uniformly of the natural size of the parts delineated, and afford a scale to guess how much the other figures are magnified.

